

DEPARTMENT OF THE INTERIOR

REPORT

OF THE

SURVEYOR GENERAL

OF

DOMINION LANDS

FOR THE

YEAR ENDING JUNE 30

1905

PRINTED BY ORDER OF PARLIAMENT



OTTAWA

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EXCELLENT MAJESTY

1906

DEPARTMENT OF THE INTERIOR,
TOPOGRAPHICAL SURVEYS BRANCH,
OTTAWA, October 23, 1905.

W. W. CORY, Esq.,
Deputy of the Minister of the Interior,
Ottawa.

SIR,—I have the honour to submit the following report upon the operations of the Topographical Surveys Branch for the twelve months ending June 30, 1905.

SURVEYS OF 1904.

During the calendar year of 1904, eighty-two survey parties were employed. Of these, eighty were engaged on township surveys and two on other surveys. Fifty-seven of the parties were working under contract and twenty-five were paid by the day. Forty-four of the parties working under contract were making surveys in the North-west Territories, five were in Manitoba and eight were employed partly in Manitoba and partly in the North-west Territories. The parties paid by the day were distributed as follows :—

DISTRIBUTION OF PARTIES UNDER DAILY PAY, 1904.

1. C. F. Aylsworth.—Saskatchewan and miscellaneous surveys in Central Manitoba.
2. P. R. A. Belanger.—Restoration surveys in Assiniboia, north of Qu'Appelle.
3. L. T. Bray.—Resurveys in southern Manitoba.
4. E. J. Boswell.—Resurvey of townsite of Whitemouth, Man.
5. E. Bray.—Outlines north-west of Edmonton.
6. L. C. Charlesworth.—Subdivision of Hamlet Plots, Willow Bunch.
7. J. D. Craig.—Inspector of surveys, eastern section.
8. J. J. Dalton.—Miscellaneous subdivision surveys in southern Alberta.
9. L. E. Fontaine.—Outlines in northern Alberta.
10. E. W. Hubbell.—Renewal surveys south-east of Edmonton.
11. A. W. Johnson.—Subdivision near Harrison lake, B.C.
12. J. A. Kirk.—Subdivision near Revelstoke, B.C.
13. G. J. Lonergan.—Renewal surveys in Edmonton district.
14. J. K. McLean.—Outlines north of Edmonton.
15. T. S. Nash.—Inspector of surveys, eastern Alberta and Onion Lake district.
16. E. H. Phillips.—Inspector of surveys, south of Battleford.
17. J. E. Ross.—Subdivision near Kamloops, B.C.
18. W. R. Reilly.—Subdivision near Athabaska Landing.
19. H. W. Selby.—Outlines in Peace River district.
20. A. Saint Cyr.—Outlines in Peace River district.
21. G. H. Watt.—Inspector of surveys, Edmonton and Calgary district.
23. J. N. Wallace.—Outlines in Peace River district.
23. A. O. Wheeler.—Topographical survey in Rocky Mountains.
24. J. A. Belleau.—Exploration in Peace River district in British Columbia.
25. M. B. Weekes.—Base line in Manitoba and North-west Territories.

During the year four hundred and eighty-four whole townships and forty-nine fractional townships were completely subdivided while a partial subdivision was made

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of thirty-nine other townships ; one hundred and twenty-one townships were completely resurveyed and a partial resurvey was made of twenty-one others.

G. H. Watt, D.L.S., J. D. Craig, D.L.S., E. H. Phillips, D.L.S., and T. S. Nash, D.L.S., of the office staff, acted during the season as inspectors of surveys made under contract. Each had a party under his charge to assist him in the work. Fifty-three contracts in all were inspected, six being contracts for surveys in 1903 and forty-seven contracts for surveys during 1904.

The following statement for the years 1902, 1903 and 1904 gives a comparison of the work of the parties engaged on township surveys during the different years :—

| | 1904. | 1903. | 1902. |
|------------------------------|--------|--------|--------|
| | Miles. | Miles. | Miles. |
| Township outlines..... | 1,285 | 833 | 1,919 |
| Section lines..... | 24,488 | 25,982 | 5,867 |
| Traverse..... | 4,441 | 4,050 | 1,282 |
| Re-survey..... | 7,699 | 5,390 | 3,269 |
| Total for season..... | 37,913 | 36,255 | 12,337 |
| Number of parties..... | 80 | 65 | 37 |
| Average miles per party..... | 474 | 558 | 333 |

The decrease in the average number of miles per party from five hundred and fifty-eight (558) in 1903, to four hundred and seventy (470) in 1904, is due mostly to the fact that in 1903 the parties were working almost entirely in bare prairie but in 1904, many of the parties were at work in heavily wooded country. As stated in my last report the low average in 1902 was due to the rains, floods and high water that prevailed that year.

A comparison of the work of surveyors under daily pay and of surveyors under contract for the same three years is given in the following statement :—

Work of P. R. A. Belanger (paid by the day).

| | 1904. | 1903. | 1902. |
|--------------------|--------|--------|--------|
| | Miles. | Miles. | Miles. |
| Re-surveys..... | 2,768 | 3,100 | 2,878 |
| Section lines..... | | 28 | |
| Traverse..... | | 6 | |

Work of parties under daily pay.

| | 1904. | 1903. | 1902. |
|------------------------------|--------|--------|--------|
| | Miles. | Miles. | Miles. |
| Township outlines..... | 719 | 632 | 1,214 |
| Section lines..... | 235 | 478 | 1,188 |
| Traverse..... | 223 | 236 | 489 |
| Re-survey..... | 2,122 | 497 | 374 |
| Total for the season..... | 3,299 | 1,843 | 3,265 |
| Number of parties..... | 22 | 12 | 17 |
| Average miles per party..... | 150 | 154 | 192 |

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Work of parties under contract.

| | 1904. | 1903. | 1902. |
|------------------------------|--------|--------|--------|
| | Miles. | Miles. | Miles. |
| Township outlines | 566 | 201 | 705 |
| Section lines..... | 24,253 | 25,476 | 4,679 |
| Traverse..... | 4,218 | 3,808 | 793 |
| Re-survey..... | 2,809 | 1,793 | 17 |
| Total for the season..... | 31,846 | 31,278 | 6,194 |
| Number of parties..... | 57 | 52 | 19 |
| Average miles per party..... | 559 | 601 | 326 |

SURVEYS OF 1905.

The season of 1905 has so far proved a most favourable one for survey operations. Prior to the first of July forty parties were at work, thirty-five being engaged on township surveys and two on other surveys. Twenty-four parties were paid by the day and sixteen were working under contract. Fifteen of the survey contractors were working in the North-west Territories and one in Manitoba. The parties paid by the day were distributed as follows :—

1. C. F. Aylsworth.—Resurvey in northeastern Assiniboia.
2. D. Beatty.—Resurvey northwest of Lake Manito.
3. F. R. A. Belanger.—Superintendent of surveys.
4. J. A. Belleau.—Exploration in Peace River district in British Columbia.
5. L. T. Bray.—Resurvey in southern Manitoba.
6. R. W. Cautley.—Survey of the sixteenth base line west of fifth meridian.
7. A. Driscoll.—Survey of part of seventeenth base line west of fifth meridian.
8. C. C. Fairchild.—Subdivision west of Calgary.
9. L. E. Fontaine.—Subdivision west of Edmonton.
10. G. A. Grover.—Resurvey east of Lake Manitoba.
11. E. W. Hubbell.—Resurvey in central Assiniboia.
12. A. W. Johnston.—Survey of south limit of railway belt west from Nicola river in British Columbia.
13. G. J. Lonergan.—Resurvey in central Alberta.
14. W. G. McFarlane.—Inspector of surveys western district.
15. C. F. Miles.—Resurvey and subdivision in southern Alberta.
16. T. S. Nash.—Inspector of surveys eastern district.
17. Geo. Ross.—Resurvey and subdivision northwest of Last Mountain Lake.
18. J. E. Ross.—South limit of railway belt westerly from Columbia river.
19. B. J. Saunders.—Survey of part of fifteenth base line west of fifth meridian.
20. H. W. Selby.—Outlines in Peace River district and Shaftsbury settlement.
21. A. Saint Cyr.—Outlines in Peace River district.
22. J. N. Wallace.—Outlines in Peace River district.
23. Jas. Warren.—Resurveys in Willow Bunch district.
24. A. O. Wheeler.—Topographical survey in Rocky Mountains.

Three of these parties were surveying base lines and block outlines in the Peace River district and three other parties were engaged on similar work between the fifth and sixth meridians.

Base lines and block outlines are the governing lines in the system of survey of Dominion lands, and are marked on the ground first in order that subdivision surveys may be based thereon in the future as the progress of settlement may demand.

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Mr. J. A. Macdonell is in charge of a party on an exploration survey to select and locate three million five hundred thousand acres of land in the Peace River district, in British Columbia, granted to the Dominion by an Act of the legislature of that province in 1883, as a compensation for the lands in the railway belt which had been alienated prior to the transfer of the belt to the Dominion. The section of the Act under which the grant is made is as follows :—

‘ There is hereby granted to the Dominion government three and a half millions of acres of land in that portion of the Peace River district of British Columbia lying east of the Rocky Mountains and adjoining the North-west Territory of Canada, to be located by the Dominion in one rectangular block.’

Mr. J. A. Belleau, D.L.S., is employed as assistant on Mr. Macdonell’s party to survey the boundaries of the block after it has been selected by Mr. Macdonell, to locate points, and otherwise to assist in expediting the inspection where technical knowledge is required.

The names of the surveyors employed in 1904-5, and a description of the work done by each, are given in Appendices Nos. 1 and 2.

Reports of the surveyors under daily pay upon their operations in 1904 and 1905, are inserted as Appendices Nos. 11 to 27, inclusive.

DESCRIPTION OF TOWNSHIPS.

Descriptions of the townships subdivided have been compiled from the surveyors’ reports received during the twelve months ending June 30, 1905 ; they are given as Appendix No. 29. For convenience of reference the descriptions have been classified by townships and ranges.

ALLOWANCES TO SURVEYORS UNDER DAILY PAY.

Under the clauses of the Order in Council fixing surveyor’s allowances, the surveyor in charge of a party had an allowance of one dollar per day for himself and sixty cents per day for every other member of his party, which allowance was to cover not only rations, but board and hotel expenses, meals on trains and rent of camp equipage. By Orders in Council of April 24, 1897, and May 16, 1899, the board and camp allowances for an assistant were made the same as for the surveyor in charge.

These allowances were sufficient twenty years ago but owing to the general increase in prices and especially in the prices of food supplies they had become inadequate for the present time.

A new schedule of allowances was prepared and approved by Order in Council of April 11, 1905. By this schedule the surveyor’s allowances for himself amount to one dollar and thirty-five cents per day, for his assistant to ninety cents per day, and for each other member of his party to sixty-five cents per day in addition to a lump sum of one dollar for the whole party. The following is a copy of the Order in Council :—

‘ On a memorandum, dated March 21, 1905, from the Acting Minister of the Interior, stating that allowances for rations, board and camp equipage are granted to the surveyor in charge of a survey party by Order in Council of October 26, 1894, the clauses relating to the said allowances being as follows :—

‘ 9. The surveyor shall be allowed for himself and every man of his party a ration allowance of fifty cents per diem while in the field.

‘ 11. For meals, board and hotel expenses of himself and party while in the field, the surveyor shall be allowed, in addition to the ration allowance, a sum of twenty-eight cents per diem for himself and four cents per diem for every other member of the party.

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'12. Camp equipage shall be owned and furnished by the surveyor. For its use he shall be allowed while in the field twenty-two cents per day for himself, and six cents per day for every other member of the party.

'The Minister further states that, by Orders in Council of April 24, 1897, and May 16, 1899, the board and camp equipages allowances for the assistant are made the same as for the surveyor in charge, when the assistant is a Dominion or Provincial Land Surveyor.

'The Minister further states that it has been represented on behalf of the surveyors that owing to the general increase in prices during recent years, specially in the prices of food supplies, the allowances have become inadequate and are no longer sufficient to feed and equip properly the men of a survey party. It is also pointed out that the surveyor in charge of a small party is at a greater disadvantage, the cost per man for food and equipment being higher than for a large party.

'The Minister recommends in order that surveyors may be able to meet their expenses and that small parties may be placed on a more favourable footing, that clauses 9, 11 and 12 of the Order in Council of October 26, 1894, and the Orders in Council of April 24, 1897, and May 16, 1899, be cancelled and the following clauses substituted :—

'1. The surveyor in charge of a survey party shall be allowed a special ration allowance of one dollar per day for the party, such allowance to be paid as long as the surveyor remains in the field. He shall further be allowed an ordinary ration allowance of fifty-five cents per day for himself and every member of his party while in the field.

'2. For meals, board and hotel expenses of himself and party the surveyor shall be allowed, in addition to the ration allowance, a sum of forty cents per day for himself and four cents per day for every other member of his party while in the field.

'3. Camp equipage shall be owned and furnished by the surveyor. For its use he shall be allowed while in the field forty cents per day for himself and six cents per day for every other member of the party.

'4. When an assistant is regularly appointed as such by the Minister of the Interior the board and camp equipage allowances for him shall be twenty-five cents and ten cents per day respectively.

'The Committee submit the same for approval.

(Signed) 'JOHN J. McGEE,
'Clerk of the Privy Council.'

RATES FOR SUBDIVISION SURVEYS.

In the schedule of rates for the subdivision of townships as set forth in the Orders in Council of February 3, 1903, and February 19, 1904, the following two clauses occur, viz.:—

1st. Section lines shall be paid for at the rate of five dollars per mile of line surveyed.

15th. A payment at such rate as the Surveyor General may allow but not exceeding fifteen dollars per township may be made for the determination of the astronomical direction of the lines of the survey.

It was found that a number of contractors would not take the trouble of ascertaining the directions of the lines ; some of them did not even pretend to do so and made no astronomical observations. As correct plans of the surveys could not be made without knowing the directions of the surveyed lines, it was necessary that steps should be taken to compel surveyors to furnish these directions. Accordingly an Order in Council was passed on April 11, 1905, reducing the rate of pay for the survey of section lines from five dollars to three dollars and fifty cents per mile, and increasing the rate for the determination of the astronomical direction of the lines from fifteen dollars per township to two dollars per mile.

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This amendment to the rates causes little or no change in the total cost of the survey of a township, but under it the remuneration of a surveyor whose work is not properly done may be reduced one hundred dollars per township instead of fifteen dollars per township, as under the old regulations.

The following is a copy of the Order in Council :—

‘ On a report dated March 28, 1905, from the Acting Minister of the Interior, stating that in pursuance of the provisions of sub-clause 1 of clause 19 of “ The Dominion Lands Act,” Chapter 54 of the Revised Statutes, a schedule of rates for the payment of township subdivision surveys executed under contract, was fixed by Orders in Council of February 3, 1903, and February 19, 1904.

‘ The Minister recommends that the first and fifteenth clauses of the said schedule be cancelled and the following substituted therefor :—

‘ 1. Section lines shall be paid for at the rate of three dollars and fifty cents per mile of line surveyed.

‘ 15. A payment at such rate as the Surveyor General may allow, but not exceeding two dollars per mile of township outline or section line surveyed, may be made for the determination of the astronomical direction of the lines of the survey.

‘ The Committee submit the same for approval.’

MANUAL OF SURVEYS.

As stated in last year's report, it was found that, owing to the many important changes in methods, a few details had been overlooked in the edition of the Manual of Instructions for the guidance of Dominion Land Surveyors issued in 1903. A small booklet of amendments was issued in 1904, but the edition of 1903 being exhausted, it became necessary to prepare a revision. Amendments were introduced wherever needed and other improvements made. The manuscript is now in the hands of the printer and it is expected to be ready for distribution to surveyors in a short time.

The issue of the astronomical field tables described in last year's report has been continued. These tables are greatly appreciated by surveyors whose work is thereby much facilitated. They have contributed in a large measure to the remarkable increase in the accuracy of our surveys during the last two years.

OFFICE WORK.

Several changes have taken place during the year in the office staff. L. P. Kennedy, third-class clerk in the Metcalfe street office, died. Miss. M. F. Percival has been appointed stenographer and typewriter. Messrs. J. D. Craig, D.L.S., T. S. Nash, D.L.S., E. H. Phillips, D.L.S., and G. H. Watt, D.L.S., were absent temporarily in charge of parties in the field inspecting surveys made under contract. The following were also absent temporarily, acting as assistants to surveyors in the field :—H. G. Barber, P. A. Carson, T. H. G. Clunn, J. C. Baker, E. L. Burgess, F. G. D. Durnford, John Empey, W. T. Green, F. D. Henderson, F. H. Mackie, J. E. Morrier, G. McMillan, A. G. Stacey, C. C. Smith, H. L. Seymour and J. E. Umbach. Messrs. J. C. Baker, J. N. Goodall, H. G. Jackson, K. R. McLennan, D. F. Robertson, C. A. Rooney, J. H. Smith, J. V. Dillabough, O. Higman, jr., E. E. Malone, D. H. Philp, G. S. Roxburgh, I. J. Steele, and R. Jones left the office. The additions to the staff of draughtsmen during the year were :—M. B. Weekes, D.L.S.; A. L. Cummings, B.Sc.; W. L. McIlquham, B.Sc.; H. L. Chilver, J. N. Goodall, R. W. Morley and J. H. Smith, graduates of the school of Practical Science; Walter Bergin, transferred from the lithographic office; A. W. Ashton, A. A. Bailie, A. S. Cram, M. F. Cochrane, J. E. Featherston, H. V. Finnie, J. E. Morrier, W. J. Moule, J. M. Mudie, W. D. McLennan, H. A. Mackenzie, F. W. Rice, C. H. Taggart, and W. E. Weld. Messrs. H. M. Blatchly and S. Chandler were added to the staff of the geographer. Messrs. H. Fitz-

simons and F. A. Moore were transferred to the railway and swamp lands branch. Messrs. J. D. Craig, D.L.S.; J. D. McLennan, S. S. McDiarmid, D.L.S., and W. F. Ratz, D.L.S., were transferred to the office of the boundary commissioner. Messrs. E. Lecourt and A. W. Ashton were transferred to the survey records office, and J. E. Featherston to the correspondence branch. W. McL. Mainguy, of the Metcalfe street office, died on August 26, 1904. He was first appointed to the staff on January 21, 1880.

Sectional maps are plotted in this office from the field notes of surveys and other information, on a scale of two miles to one inch. In printing these are reduced to a scale of three miles to one inch and the plans are issued on that scale. It was found, however, that for many purposes for which they are required, the maps are too large and inconvenient. Now, a smaller edition on a scale of six miles to one inch is also issued. This has been done for all the sectional maps completed to date, of which there

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are sixty-four, and has been found very satisfactory. The small sectional maps are now generally asked for.

The following sectional maps have been revised and reprinted :—

| | | |
|----------------------|-----------|------------|
| Swift Current | Vermilion | Carlton |
| Red Deer | Seymour | Battleford |
| Ribstone Creek | Donald | Kamloops. |
| Rocky Mountain House | | |

Up till this spring the numbering of the sectional maps was that adopted when the maps were first issued. Surveys in the Peace River district which are now being made necessitated the production of maps of this part of the territories and as no provision for numbering such was made in the old system of numbering, a new scheme was devised as given below. The advantages are, first, the numbering is uniform covering all Dominion lands, extending from the Pacific ocean to the Atlantic ocean and from the forty-ninth parallel of latitude to the Arctic ocean. A sectional map covers in latitude eight townships and in longitude, the number of ranges most nearly approximating two degrees. As the number of ranges in two degrees of longitude decreases by the convergence of the meridians, each group of four maps in a tier extending north is reduced by one range ; thus the first four north of the forty-ninth parallel are fifteen ranges in width, the second four are fourteen, the third four are thirteen and so on. In some cases the new maps do not cover exactly the same territory as the former ones but care is taken in issuing them to have no part of the country at any time which is not included in some map. The sheets may be asked for by their names or numbers.

In issuing section maps of the railway belt in British Columbia it has been the practice to show on the map only that part of the territory which lies within the railway belt ; but now the topography of the country is given as nearly correct as possible for all of the territory comprised within the limits of the sheet whether the same is inside the railway belt or not.

An improvement has also been made in the method of draughting township plans for printing. As stated in the annual report of the Surveyor General last year a rough plan of the township or settlement as the case may be, is made upon the examination of the returns sent in by the surveyor by compiling his returns with the notes of former surveys in the same township, and from this rough plan a copy on the same scale is drawn for photozincography. Up till recently the draughting of these plans was all done with pen and ink. A number of draughtsmen were employed continuously at this work and the difference between the styles of work of the different men was very noticeable on the finished plans. As the number of plans increased additions to the staff of draughtsmen were necessary and men who had a limited amount of experience in the work had to be employed. It was not to be expected that the draughting of the new men would compare favourably with that of men who had considerable experience. To overcome these two difficulties and at the same time to increase the number of plans issued, several type-stamping sets were procured. These are the same as those used in the Ordnance Office, Southampton, England, and have given good satisfaction. By means of these type stamps, the distances, areas, bearings and corner monuments are stamped on the plans, leaving a proportionally small amount of pen and ink work to be done. This insures more uniform plans and besides gives them a much neater appearance. The most important advantage perhaps is that the time for drawing a plan has been reduced one-eighth, a saving in time which when applied to the number of plans issued in a year is quite appreciable. It is thought that with several proposed improvements in the stamps the draughting of the plans will be still further facilitated.

At the end of June the office staff consisted of the chief draughtsman and fifty-four draughtsmen. In addition to the above mentioned staff of fifty-four at the end of June seven of the draughtsmen were engaged in survey work in the field, one acting as inspector of surveys and the others as assistants to surveyors working under daily pay. It is expected that these will return to the office when the season's operations

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have been closed, and they will take up their places on the office staff. The clerks who have spent some time at actual work in the field are more valuable to the office than those who have not, as they have a working knowledge of surveying operations and can understand the conditions under which a survey is made, the degree of accuracy to be expected, and many other details not to be learned elsewhere.

As last year the staff was divided, the greater part of the staff being in the building on the corner of Slater and Metcalfe streets, and the other part in the Orme block on Sparks street ; this division is not very economical as regards time, which is wasted in the transfer of business between the two offices. The work done in the Orme building is connected principally with the compilation and preparation of sectional maps and maps in connection with Yukon surveys, and all the office work resulting from surveys in the railway belt of British Columbia. The work done in the building on Slater and Metcalfe streets is divided among three principal divisions. In one division, instructions for surveys are prepared and all returns of surveys are entered and kept in a set of books for that purpose, requests for information with regard to surveys, plans, etc., are answered, preliminary plans are prepared and issued, descriptions of parcels of land for patent are prepared, the astronomical field tables for the use of surveyors in the field are calculated and issued and the manual, annual report and various pamphlets and papers are compiled, edited and proofread. In another division the returns of surveys are examined and the plans are plotted, the amount of advance to be made to survey contractors on account of contract is determined, and the contractors' field notes are checked with the inspectors' notes and reports made, upon which the amount of deductions for careless or incompetent work is based. The returns examined include returns of survey of townships, settlements, group lots, mineral claims, townsites, trails, &c. A great difference is noted in the condition and accuracy of returns made by some surveyors as compared with those made by others. Some field notes are very concise, clear and carefully made whereas others which may appear to be neatly made are inaccurate and inconsistent. Carefully made returns are quickly plotted and little delay is experienced in publishing the plans, but carelessness in making some returns is the cause of considerable amount of correspondence with the surveyor, before the notes are complete enough to allow of the survey being approved, and the plan issued. This correspondence and the delay involved by it is the chief difficulty in the way of issuing the plans promptly. Some plans such as that of a settlement require much longer to plot than the ordinary township plans. The accounts for contract work are also examined and made up in this division. In the third division all the stamping and draughting of the finished plans is done in the manner outlined above. This includes also the proofreading of the plans when they are printed.—The plans drawn are plans of townships, group lots, settlements, townsites, &c.

PHOTOGRAPHIC OFFICE.

A schedule of the work executed in the photographic office is given as Appendix No 9 : the total number of negatives and prints is 4,746, against 5,356 last year. A comparison of the statements shows 921 wet plate negatives and 675 zinc transfers against 847 and 467 respectively last year ; the decrease is in vandyke and silver prints.

The greater part of the work of the photographic office consists in reducing plans to proper scale for plotting, photographing plans and maps for reproduction and enlarging the views of photographic surveys.

The staff consists of one photographer in charge, one photo-lithographer and photo-engraver, three photographers and two assistants.

LITHOGRAPHIC OFFICE.

All township plans are now printed by photo-zincography. Zinc is also employed for other work whenever it is possible to do so : it is very convenient and economical

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and the quality of the work is excellent. Stones are, however, still in use for large work and for fine printing.

The statement of the work executed, given as Appendix No. 10 to this report, shows 129 maps printed against 51 last year and 524 township plans against 490 last year.

The staff consists of one foreman, one transferer, one power press printer, one apprentice, one stone polisher and one autographer.

BOARD OF EXAMINERS FOR DOMINION LAND SURVEYORS.

The regular meeting of the board was held at the usual time, commencing on the second Monday in February, and special meetings were also held from January 23 to 25, from March 6 to 10, on April 20, from May 4 to 13 and on June 30.

During the regular meeting in February, examinations were conducted in Ottawa, Toronto, Winnipeg, Calgary and Vancouver, and a special examination was also held in Toronto from May 4 to 10. Those in Toronto were held at the School of Practical Science under the direction of Prof. L. B. Stewart, while the examinations in Winnipeg, Calgary and Vancouver were conducted respectively by Messrs. J. L. Doupe, A. O. Wheeler and E. B. Hermon.

The increase in the number of candidates noticed last year is still maintained: Forty-two candidates passed the examination required previous to being articled as pupil to a surveyor, and twenty passed the final examination for commission as Dominion land surveyor.

The following candidates were successful in passing the examinations :—

Preliminary Examination for Admission as Articled Pupil.

| | |
|-------------------------------------|----------------------------------|
| A. Laporte, Montreal, Que. | P. M. Sauder, Regina, Assa. |
| L. Brenot, Ottawa, Ont. | E. Rochon, Clarence Creek, Ont. |
| H. M. R. Soars, Edmonton, Alta. | F. H. Kitto, Edmonton, Alta. |
| A. S. Stewart, Red Deer, Alta. | G. B. Dodge, Ottawa, Ont. |
| E. E. D. Wilson, Ottawa, Ont. | F. N. Rutherford, Toronto, Ont. |
| A. J. Elder, Barrie, Ont. | W. A. Johnston, Athens, Ont. |
| J. J. Robertson, Kingston, Ont. | G. T. Clark, Toronto, Ont. |
| B. B. Patten, St. George, Ont. | O. Hall, Frank, Alta. |
| J. R. Cockburn, Toronto, Ont. | E. W. Walker, N. Cayuga, Ont. |
| W. P. Near, Toronto, Ont. | T. F. Code, Smith's Falls, Ont. |
| M. R. Riddell, Toronto, Ont. | J. A. McFarlane, Toronto, Ont. |
| J. B. McFarlane, Claremont, Ont. | E. M. Dennis, Ottawa, Ont. |
| L. Malcolm, Stratford, Ont. | W. G. Swan, Kincardine, Ont. |
| A. Latornell, Meaford, Ont. | C. A. Chilver, Walkerville, Ont. |
| H. L. Wagner, Toronto, Ont. | E. A. Henry, Kincardine, Ont. |
| L. D. N. Stewart, Collingwood, Ont. | W. H. Young, Clifford, Ont. |
| P. A. Shaver, Grantley, Ont. | F. H. Sykes, Toronto, Ont. |
| J. B. Challies, Winchester, Ont. | W. E. Weld, London, Ont. |
| E. F. Pullen, Oakville, Ont. | W. A. Begg, West Flamboro, Ont. |
| R. W. Morley, Ottawa, Ont. | S. Chandler, Ottawa, Ont. |
| H. S. Southworth, Toronto, Ont. | F. A. McDiarmid, Ottawa, Ont. |

Final Examination for Commission as D.L.S.

| | |
|----------------------------------|--------------------------------------|
| E. L. Burgess, Ottawa, Ont. | R. H. Cautley, Edmonton, Alta. |
| C. Engler, Ottawa, Ont. | F. S. Clements, P.L.S., Nelson, B.C. |
| A. L. McNaughton, Cornwall, Ont. | W. W. Meadows, O.L.S., Windsor, Ont. |

SESSIONAL PAPER No. 25a

W. F. Ratz, Ottawa, Ont.
 J. L. R. Parsons, Toronto, Ont.
 J. M. Empey, Thamesford, Ont.
 A. L. MacLennan, Toronto, Ont.
 S. S. McDiarmid, Woodstock, Ont.
 R. H. Montgomery, Brantford, Ont.
 N. J. Ogilvie, Ottawa, Ont.

M. P. Bridgland, Calgary, Alta.
 W. G. McFarlane, Toronto, Ont.
 W. J. Blair, O.L.S., New Liskeard, Ont.
 A. H. Green, P.L.S., Nelson, B.C.
 J. H. Smith, O.L.S., Ottawa, Ont.
 W. B. Young, P.L.S., Winnipeg, Man.
 E. W. M. Lysons, P.L.S., Greenwood, B.C.

Twenty-one candidates who had passed the final examination furnished the bonds required by clause 115 of the Dominion Lands Act and received their commissions as Dominion land surveyors.

Seven subsidiary standards of length were issued to surveyors during the year, in accordance with clause 125 of the Dominion Lands Act.

The correspondence of the board amounted to :—

| | |
|---------------------------|-----|
| Letters received. | 732 |
| Letters sent. | 781 |

A list of the surveyors who have been furnished with standard measures to June 30, 1905, is given in Appendix No. 4, and examination papers used during the past year are submitted as Appendix No. 28.

APPENDICES.

The following documents are appended:—

No. 1.—Schedule of Dominion land surveyors employed, and work executed by them, from July 1, 1904, to December 31, 1904.

No. 2.—Schedule of Dominion land surveyors employed, and work executed by them, from January 1, 1905, to June 30, 1905.

No. 3.—Schedule showing for each surveyor employed on township surveys during 1904, the number of miles surveyed of township subdivision lines, township outlines, traverses of lakes and rivers, and resurvey, also cost of the same.

No. 4.—List of Dominion land surveyors who have been supplied with standard measures.

No. 5.—List of lots in the Yukon Territory of which surveys have been confirmed during the year ending June 30, 1905.

No. 6.—List of miscellaneous surveys in the Yukon Territory of which returns have been received during the year ending June 30, 1905.

No. 7.—Statement of work executed in the office of the chief draughtsman.

No. 8.—Statement of work performed in the survey records office for the twelve months ending June 30, 1905.

No. 9.—Statement of work executed in the photographic office during the twelve months ending June 30, 1905.

No. 10.—Statement of work executed in the lithographic office during the twelve months ending June 30, 1905.

No. 11.—Report of C. F. Aylsworth, D.L.S.

No. 11a.—Report of C. F. Aylsworth, D.L.S.

No. 12.—Report of P. R. A. Belanger, D.L.S.

No. 13.—Report of Edgar Bray, D.L.S.

No. 14.—Report of J. D. Craig, D.L.S.

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No. 15.—Report of J. J. Dalton, D.T.S.

No. 16.—Report of L. E. Fontaine, D.L.S.

No. 17.—Report of E. W. Hubbell, D.L.S.

No. 18.—Report of A. W. Johnson, D.L.S.

No. 19.—Report of G. J. Lonergan, D.L.S.

No. 20.—Report of J. K. McLean, D.L.S.

No. 21.—Report of E. H. Phillips, D.L.S.

No. 22.—Report of W. R. Reilly, D.L.S.

No. 23.—Report of J. E. Ross, D.L.S.

No. 24.—Report of Arthur Saint Cyr, D.L.S.

No. 25.—Report of H. W. Selby, D.L.S.

No. 26.—Report of J. N. Wallace, D.L.S.

No. 27.—Report of G. H. Watt, D.L.S.

No. 28.—Examination papers of the board of examiners for Dominion land surveyors.

No. 29.—Descriptions of surveyed townships submitted by Dominion land surveyors during the year ending June 30, 1905.

I have the honour to be, sir,

Your obedient servant,

E. DEVILLE,

Surveyor General.

SESSIONAL PAPER No. 25a

APPENDIX No. 1 TO THE REPORT OF THE SURVEYOR GENERAL.

SCHEDULE of Dominion Land Surveyors employed, and work executed by them, from
July 1, to December 31, 1904.

| Surveyor. | Address. | Description of Work. |
|-------------------------|--------------------------|--|
| Abrey, G. B..... | Toronto, Jct., Ontario.. | Contract No. 4 of 1903. Subdivision of township 43, range 20, west of the second meridian. Contract No. 10 of 1904. Subdivision of townships 42, 47 and 48, range 15; townships 47 and 48, range 16; townships 40, 42 and 43, range 17 and townships 49, ranges 18 and 19, all west of the second meridian. |
| Aylen, John | Aylmer, Que. | Contract No. 52 of 1904. Subdivision of townships 29 and 30, range 5; part of township 28, range 5; townships 27, 28 and 29, range 6, and survey of north outline of township 28, range 4, all west of the fifth meridian. |
| Aylsworth, C. F..... | Madoc, Ont. | Re-survey of north and part of east and west outlines of township 21, range 6, west of the principal meridian and south outline of township 11, range 7, east of the principal meridian. Survey of group of settlements on Bad Throat river, Man., and re-survey of Rivertown in sections 20 and 21, township 23, range 4, east of the principal meridian. |
| Beatty, David | Parry Sound, Ont. | Contract No. 23 of 1904. Subdivision of townships 50, ranges 26 and 27; township 51, range 27 and part of township 50, range 28, west of the second meridian; part of townships 48, ranges 8 and 9; townships 27 to 34, ranges 24 and 25; townships 28, 29 and 30, ranges 26 and 27; townships 27, 28, 29 and 30, range 28, and part of townships 27 and 28, range 29, west of the third meridian; townships 27 to 32, range 1, west of the fourth meridian; survey of outlines in townships 51 and 52, range 26 and township 52, range 27, west of the second meridian and in townships 51 and 52, range 2, west of the third meridian. |
| Beatty, Walter | Delta, Ont. | Contract No. 24 of 1904. Subdivision of townships 31 and 32, ranges 26, 27 and 28, part of township 29, range 29; and townships 30, 31 and 32, range 29, all west of the third meridian. |
| Belanger, P. R. A. | Ottawa, Ont. | Renewal of corner marks in township 28, ranges 7 and 8, township 32, range 12; townships 27 and 27A, range 13; township 27A, range 13A; townships 27 and 27A, range 14; townships 23, 24 and 32, range 16; townships 23, 24, 25, 26, 27, 28, 30, 31 and 32, range 17; townships 23 to 33, ranges 18 and 19; township 22, range 18; townships 23 to 28, range 20; townships 4 and 5, ranges 26 and 28; townships 3, 4, 5 and 6, range 27; all west of the second meridian. |
| Bolton, Lewis | Listowel, Ont. | Contract No. 29 of 1904. Subdivision of townships 52, 53, 54, 55 and 56, range 4 and township 52, range 5, all west of the fourth meridian. |
| Boswell, E. J..... | Winnipeg, Man. | Re-survey in townsite of Whitemouth, Man., in township 11, range 11, east of the principal meridian. |

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APPENDIX No. 1 TO THE REPORT OF THE SURVEYOR GENERAL.

SCHEDULE of Dominion Land Surveyors employed, and work executed by them, from July 1 to December 31, 1904.—*Continued.*

| Surveyor. | Address. | Description of Work. |
|------------------------|--------------------------|---|
| Bourgeault, A..... | St. Jean Port Joli, Que. | Contract No. 7 of 1904. Subdivision of township 33, range 8; township 34, range 9 and townships 36, ranges 5 and 7, all west of the second meridian. |
| Bourgault, C. E. | St. Jean Port Joli, Que. | Contract No. 43 of 1904. Part subdivision of townships 52 and 53, range 6 and townships 53 and 54, range 7, all west of the fifth meridian. |
| Bowman, H. J. | Berlin, Ont..... | Contract No. 20 of 1904. Subdivision of townships 27, 28, 29, 31, 32, 33 and 34, range 18, and townships 29, 30, 31, 32, 33 and 34, range 19, all west of the third meridian. |
| Bray, Edgar | Oakville, Ont. | Day work of 1904. Survey of fifth meridian across townships 72 and 73 and nineteenth base line across ranges 1 to 14, all west of the fifth meridian. |
| Bray, L. T..... | Amherstburg, Ont. | Retracement subdivision and outlines in townships 15, 16 and 17, range 16; township 11, range 21, township 12, range 23 and township 10, range 26, all west of the principal meridian. |
| Carbert, J. A. | Lacombe, Alberta | Contract No. 39 of 1904. Subdivision of townships 32 to 35, range 21, townships 33 and 34, range 22 and township 32, range 23, all west of the fourth meridian. |
| Cavana, A. G. | Orillia, Ont. | Contract No. 8 of 1904. Part subdivision of townships 38, 40 and 41, range 13; and subdivision of townships 39, ranges 13 and 14; townships 39 and 40, range 12; and townships 38, 40, 41 and 42, range 14, all west of the second meridian. |
| Charlesworth, L. C.... | Medicine Hat, Sask. .. | Day work of 1904. Survey of Hamlet plots, 'Willow Bunch,' in southeastern quarter section 17, township 5, range 27, west of the second meridian. |
| Côté, J. A..... | Quebec, Que | Contract No. 18 of 1904. Subdivision of townships 27 to 34, ranges 14 and 15, and townships 27 and 28, ranges 10 and 11, all west of the third meridian. |
| Côté, J. L..... | Pakan, Alberta | Contract No. 57 of 1904. Subdivision of townships 56, ranges 12 and 13; townships 59 and 60, range 14; townships 60, ranges 15, 16 and 17, and part of township 60, range 18, all west of the fourth meridian. |
| Craig, J. D..... | Ottawa, Ont. | Inspector of surveys, 1904. Eastern section. |
| Dalton, J. J. | Milton West, Ont. | Day work of 1904. Subdivision in townships 14, 16, 20 and 23, range 1, townships 6, 8, 9, 15, 17, 18 and 20, range 2; townships 6, 18, 19 and 20, range 3, west of the fifth meridian; subdivision in townships 27, ranges 17 and 18, and re-survey in township 22, range 9, west of the fourth meridian. |
| Deans, W. J..... | Brandon, Man. | Subdivision in township 3, range 22, and township 7, range 25, both west of the principal meridian. |
| Dickson, Jas. | Fenelon Falls, Ont. .. | Contract No. 64 of 1904. Subdivision of townships 29 and 30, ranges 15 and 16; township 30, range 17 and part of township 29, range 17, all west of the principal meridian. |
| Driscoll, A..... | Edmonton, Alberta ... | Survey of section 24, township 51, range 22, west of the fourth meridian. |

SESSIONAL PAPER No. 25a

APPENDIX No. 1 TO THE REPORT OF THE SURVEYOR GENERAL.

SCHEDULE of Dominion Land Surveyors employed, and work executed by them, from July 1 to December 31, 1904.—*Continued.*

| Surveyor. | Address. | Description of Work. |
|-----------------------|------------------------|---|
| Drummond, Thos..... | Montreal, Que. | Contract No. 40 of 1904. Subdivision of township 36, range 6 ; township 37, range 7 ; townships 38, ranges 6 and 7 ; part subdivision of township 36, range 7 and township 37, range 6, all west of the fifth meridian. |
| Dumais, P. T. C. | Hull, Que. | Contract No. 4 of 1904. Subdivision of township 25, range 12 ; townships 24 and 25, ranges 13 and 14, all west of the principal meridian. |
| Edwards, Geo. | Ottawa, Ont. | Contract No. 46 of 1904. Subdivision of township 41, range 6 ; townships 39 and 40, ranges 6 and 7 ; all west of the fifth meridian. |
| Fairchild, C. C. | Brantford, Ont. | Contract No. 37 of 1904. Subdivision of townships 45, 46 and 47, range 5 ; township 46, range 6 ; township 44, range 7 ; part of township 46, range 7 ; townships 43, ranges 9 and 10 ; township 44, range 10 ; and township 43, range 11, west of the fourth meridian ; and townships 27 and 28, ranges 15 and 16, west of the principal meridian ; and townships 27 and 28, ranges 19 and 20, west of the third meridian. |
| Farncomb, A. E. | Red Deer, Alta. | Contract No. 44 of 1904. Survey of north and south outlines of township 35, range 7 and subdivision of township 58, range 1, west of the fifth meridian ; subdivision of townships 58 and 59, range 23, west of the fourth meridian. |
| Fawcett, Adam | Dawson, Y. T. | Contract No. 28 of 1904. Subdivision of townships 54 and 55, ranges 1 and 2 ; townships 54, 55 and 56, range 3, all west of the fourth meridian. |
| Fawcett, Thos..... | Niagara Falls, Ont. .. | Contract No. 36 of 1904. Subdivision of townships 37, 38, 39, 40 and 41, ranges 5 and 6 ; townships 36, 37, 40 and 41, range 7 ; township 36, range 8 ; and survey of north outlines of townships 35, ranges 6, 7 and 8, all west of the fourth meridian. |
| Fontaine, L. E. | Levis, Que. | Survey of north outlines of townships 60, ranges 1 to 7 ; townships 56, ranges 5 to 8 ; townships 48, ranges 6 to 8 ; and townships 52, ranges 8 to 12 ; all west of the fifth meridian. |
| Francis, J. | Poplar Point, Man. .. | Contract No. 58 of 1904. Subdivision of townships 22, 23, 24 and 25, range 28 ; part of township 26, range 28 ; and township 26, range 27, all west of the principal meridian. |
| Gordon, M. L. | Ottawa, Ont. | Contract No. 16 of 1904. Subdivision of townships 29, 30, 31, 32, 33 and 34, ranges 10 and 11, all west of the third meridian. |
| Gordon, R. J. | Stirling, Alberta | Contract No. 62 of 1904. Survey of east outlines of townships 7 and 8, range 12 ; subdivision of townships 5 and 6, range 12 ; townships 4 and 5, range 13 ; townships 3 and 4, ranges 14 and 15 and township 4, range 16, all west of the fourth meridian. |
| Gore, T. S. | Victoria, B.C. | Contract No. 27 of 1904. Survey of north and east outlines in township 51, range 17 ; part new survey and retracement of township 45, range 15 ; subdivision of township 52, range 17 ; townships 51 and 52, range 18 ; townships 52 and 53, ranges 19 and 20 and township 53, ranges 21 and 22, all west of the third meridian. |

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APPENDIX No. 1 TO THE REPORT OF THE SURVEYOR GENERAL.

SCHEDULE of Dominion Land Surveyors employed, and work executed by them, from July 1 to December 31, 1904.—*Continued.*

| Surveyor. | Address. | Description of Work. |
|----------------------|------------------------|--|
| Grover, G. A. | Ottawa, Ont. | Contract No. 17 of 1904. Subdivision of township 8, range 13 and townships 9, ranges 12 and 13, east of the principal meridian ; and townships 29, 30, 31, 32, 33 and 34, ranges 12 and 13, west of the third meridian. |
| Harvey, C. | Toronto, Ont. | Contract No. 5 of 1904. Subdivision of townships 26, ranges 24 and 26 ; townships 27 and 28, range 27 ; townships 29, 30 and part of 31, range 29 ; townships 29 and 30, range 30 ; and township 30, range 31, all west of the principal meridian. |
| Holcroft, H. S. | Toronto, Ont. | Contract No. 11 of 1904. Subdivision of townships 47 and 48, ranges 13 and 14 and township 46, range 13, all west of the second meridian. |
| Hopkins, M. W. | Hamilton, Ont. | Contract No. 56 of 1904. Survey of east outlines in townships 59 and 60, ranges 5 and 6 ; north and east outlines in township 59, range 7 : east outlines of townships 60, ranges 7, 8 and 12 and township 59, range 8 ; subdivision of townships 57 and 58, ranges 5, 6 and 7 ; townships 59 and 60, ranges 5 and 6 ; townships 52, 57 and 58, range 8 ; and townships 58, 59 and 60, range 11, all west of the fourth meridian. |
| Hubbell, E. W. | Ottawa, Ont. | Day work of 1904. Renewal of corners in townships 51, 52, 55, 56 and 57, range 27 ; townships 51 and 52, range 28, west of the fourth meridian ; township 51, range 1 ; township 50, range 2, west of the fifth meridian : and townships 15 and 16, range 16, east of the principal meridian. Examination of part of A. F. Martin's work in townships 15 and 16, ranges 11 and 12 ; township 14, range 11 ; and township 17, range 12, east of the principal meridian. |
| Johnson, A. W. | New Westminster, B.C. | Day work of 1904. Part subdivision and retracement of townships 10 and 11, range 26, west of the sixth meridian ; part subdivision of township 26, east of coast meridian and townships 4, 5, 6, 7, 8 and 9, range 29, west of the sixth meridian. Re-survey of part of Soowahlie Indian reserve and lot 439 in townships 25 and 26, east of coast meridian. Survey of lot 1 A, group 1, and lot 30, group 1, in township 10, range 26 ; certain lots in townsite of Boston Bar in township 10, range 26 ; and lot 2 in township 11, range 26. Traverse of Fraser river, Canadian Pacific railroad and Cariboo road and Boston Bar in townships 10 and 11, range 26. Triangulation and traverse of west shore of Harrison lake in townships 5 and 7, range 28 and townships 4, 5, 6 and 7, range 29. Traverse of Silver creek and Snowshoe creek in townships 7, 8 and 9, range 29. Survey of north limit of railway belt in townships 7, 8 and 9, range 29, west of the sixth meridian. |
| Knight, R. H. | Bruce Mines, Ont. | Contract No. 54 of 1904. Survey of north outline of township 26 and east outlines of township 29, range 28 ; township 30, range 29A ; townships 29 and 30, range 29 ; township 26, range 30 ; and township 24, range 32 ; and north outline of township 23, range 31. Subdivision of townships 27, 28 and 30, range 28 ; township 29, range 29A ; townships 25 and 26, range 29 ; and townships 24 and 25, range 31, west of the principal meridian. Re-survey of township 22, range 2, west of the second meridian. |

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APPENDIX No. 1 TO THE REPORT OF THE SURVEYOR GENERAL.

SCHEDULE of Dominion Land Surveyors employed, and work executed by them, from July 1 to December 31, 1904.—*Continued.*

| Surveyor. | Address. | Description of Work. |
|-----------------------|-------------------------|---|
| Lemoine, C. E. | Beaulieu, Que. | Contract No. 9 of 1904. Subdivision of townships 38, 39 and 40, ranges 15 and 16 ; and township 37, range 15, all west of the second meridian. |
| Lendrum, R. W. | Strathcona, Alta. | Contract No. 31 of 1904. Subdivision of townships 51 and 52, ranges 6 and 7 and township 51, range 8, all west of the fourth meridian. |
| Lonergan, G. J. | Buckingham, Que. | Day work of 1904. Retracement with renewal of corners in township 45, range 15, townships 43 and 44, range 23, townships 43, 45 and 47, range 24 ; townships 43, 44 and 47, ranges 25 and 26 ; and townships 43 and 44, ranges 27 and 28, all west of the fourth meridian. Traverse of Villa lots, Hot Springs, Rocky Mountains Park. |
| Martin, A. F. | Winnipeg, Man. | Contract No. 63 of 1904. Survey of west outlines of townships 4 and 5, range 29 ; subdivision of townships 4 and 5, range 25 ; townships 10, 11 and 12 ; ranges 25, 26 and 27 ; townships 3 and 6, range 28 and townships 4 and 5, range 29, all west of the second meridian. |
| Michaud, A. | Edmonton, Alberta | Contract No. 33 of 1904. Subdivision of townships 53, 54, 55 and 56, range 9 ; townships 54, 55 and 56, range 10 ; townships 55 and 56, range 11 and part of township 57, range 11, all west of the fourth meridian. |
| Miles, C. F. | Toronto, Ont. | Contract No. 51 of 1904. Subdivision of township 31, range 5 ; townships 30, ranges 6 and 7 ; and townships 26, 27 and 28, range 7, all west of the fifth meridian. |
| Molloy, John | Winnipeg, Man. | Contract No. 3 of 1904. Subdivision of townships 9, ranges 7, 8 and 9 ; township 10, range 8 ; townships 1, 2, 3 and 4, range 9 ; townships 3 and 4, range 10, and township 2, range 13 ; and part subdivision of townships 3 and 4, range 11, all east of the principal meridian. |
| McFee, A. | Innisfail, Alberta | Contract No. 21 of 1903. Subdivision of townships 36 and 37, ranges 11 and 12 and townships 36, ranges 13 and 14, all west of the fourth meridian. |
| McGrandle, H. | Huntsville, Ont. | Contract No. 60 of 1904. Subdivision of townships 58 and 59, range 22, both west of the fourth meridian. |
| McLean, J. K. | Elora, Ont. | Day work of 1904. Survey of townships 65 and 66, range 22 ; east outlines of townships 63 and 64, ranges 23 and 24, and north outlines of townships 64, ranges 22 and 23 ; and part subdivision of township 63, range 22, all west of the fourth meridian. |
| Nash, T. S. | Ottawa, Ont. | Inspector of surveys, 1904. Eastern central section. |
| O'Hara, W. F. | Ottawa, Ont. | Contract No. 45 of 1904. Subdivision of townships 42, 43 and 44, ranges 5 and 6, all west of the fifth meridian. |
| Phillips, E. H. | Ottawa, Ont. | Inspector of surveys, 1904. Eastern central section. |
| Ponton, A. W. | Macleod, Alta. | Contract No. 50 of 1904. Subdivision of township 13, range 29, west of the fourth meridian ; part of township 13, range 1 ; township 35, range 5 ; townships 33 and 34, ranges 6 and 7, west of the fifth meridian. |
| Proudfoot, H. B. | Toronto, Ont. | Contract No. 53 of 1904. Subdivision of townships 36 and 37, range 22 ; township 37, range 23 ; townships 38, 39 and part of 40, range 25 ; and townships 38, 39 and 40, range 26, all west of the principal meridian. |

APPENDIX No. 1 TO THE REPORT OF THE SURVEYOR GENERAL.

SCHEDULE of Dominion Land Surveyors employed, and work executed by them, from July 1 to December 31, 1904.—*Continued.*

| Surveyor. | Address. | Description of Work. |
|-----------------------|----------------------------------|---|
| Rainboth, G. C. | Aylmer, Que. | Contract No. 25 of 1904. Part subdivision of township 43, range 19 and township 36, range 25. Subdivision of township 35, range 25 ; townships 33, 34, 35 and 36, ranges 26 and 27, and townships 33 and 34, ranges 28 and 29, west of the third meridian ; townships 33, 34, 35 and 36, ranges 1 and 2, west of the fourth meridian ; and townships 8, ranges 12 and 13, east of the principal meridian. |
| Reilly, W. R. | London, Ont. | Contract No. 13 of 1904. Subdivision of townships 47 and 48, ranges 17, 18 and 19, west of second meridian ; and townships 65 and 66, ranges 22 and outlines in townships 65 and 66, ranges 23 and 24, west of the fourth meridian. |
| Richard, J. F. | Sainte Anne de la Pocatière Que. | Contract No. 6 of 1904. Survey of north and west outlines and part subdivision of township 37, range 29 ; and part east and west outlines of township 38, range 29 ; subdivision of townships 35 and 36, range 32, west of the principal meridian ; and townships 36, ranges 1 and 2, west of the second meridian. |
| Rinfret, Raoul..... | Edmonton, Alta. | Contract No. 41 of 1904. Subdivision of townships 48, 49 and 55, range 4, west of the fifth meridian. |
| Ross, Geo..... | Welland, Ont. | Contract No. 22 of 1904. Subdivision of townships 27, 28, 29, 30, 31, 32, 33 and 34, ranges 22 and 23, all west of the third meridian. |
| Ross, Jos. E. | New Westminster, B.C. | Day work of 1904. Subdivision of township 28, range 18 ; part subdivision of township 28, range 22, west of the fifth meridian ; township 19, range 15 ; township 20, range 17 ; townships 17, ranges 19, 20, 21, 22 and 23 ; townships 18, ranges 21 and 23, townships 13, ranges 22 and 23 ; townships 14, ranges 22 and 23, and township 15, range 23, west of the sixth meridian. |
| Roy, G. P. | Quebec, Que. | Contract No. 42 of 1904. Survey of north and south outlines of townships 52, ranges 4 and 5 ; east outlines of township 53, range 6 ; east and west outlines of townships 53 and 54, range 7 ; part subdivision of township 51, range 4, and townships 54, ranges 5 and 6 ; subdivision of townships 52 and 53, range 6, and townships 53 and 54, range 7, all west of the fifth meridian. |
| Saint Cyr, A. | Ottawa, Ont. | Survey of sixth meridian across townships 65 to 76, and eighteenth base line across ranges 23 to 27, all west of the fifth meridian. |
| Saint Cyr, J. B. | Ste. Anne de la Pérade, Que. | Contract No. 32 of 1904. Survey of north outline of township 52, range 8 ; west outline of townships 55 and 56, range 8 ; north and east outlines of township 56, range 8 ; and east outlines of townships 55 and 56, ranges 7 and 9 ; subdivision of townships 53, 54, 55 and 56, ranges 7 and 8, all west of the fourth meridian. |
| Saunders, B. J. | Regina, Sask. | Contract No. 2 of 1904. Subdivision of townships 47 and 48, range 2 ; townships 48 and 49, range 3 ; survey of east outline of township 49, range 4, all west of the fifth meridian. |

SESSIONAL PAPER No. 25a

APPENDIX No. 1 TO THE REPORT OF THE SURVEYOR GENERAL.

SCHEDULE of Dominion Land Surveyors employed, and work executed by them, from July 1 to December 31, 1904.—*Continued.*

| Surveyor. | Address. | Description of Work. |
|---------------------|----------------------|---|
| Selby, H. W. | Toronto, Ont. | Survey of twenty-first base line across ranges 6 to 13 ; south and east outlines of township 81, range 13 ; east outlines of townships 85, 86, 87 and 88, range 1 ; townships 83 and 84, range 3 ; and township 82, range 13 ; and north outlines of township 88, range 1 and townships 83, ranges 2 and 3, all west of the sixth meridian. |
| Tyrrell, J. W. | Hamilton, Ont. | Contract No. 26 of 1904. Re-survey of township 19, range 24 ; and townships 20 and 21, ranges 24, 25 and 26, west of the principal meridian. Subdivision of township 39, range 24 ; townships 37, 38 and 39, ranges 25, 26 and 27 ; township 43, range 26 ; townships 40, 41 and 42, range 27 ; and townships 43, ranges 27 and 28, west of the third meridian. |
| Wallace, J. N. | Hamilton, Ont. | Survey of twentieth base line across ranges 1 to 13 and nineteenth base line across ranges 1 to 12, both west of the sixth meridian. |
| Warren, Jas. | Walkerton, Ont. | Contract No. 19 of 1904. Subdivision of townships 27, 28, 29, 30, 31, 32, 33 and 34, ranges 16 and 17, all west of the third meridian. |
| Watt, G. H. | Ottawa, Ont. | Inspector of surveys, 1904. Western section. |
| Weekes, A. S. | Glencoe, Ont. | Contract No. 21 of 1904. Subdivision of townships 29, 30, 31, 32, 33 and 34, ranges 20 and 21 ; and townships 27 and 28, range 21, all west of the third meridian. |
| Weekes, A. S. | Ottawa, Ont. | Contract No. 30 of 1904. Subdivision of townships 53, 54 and 55, ranges 5 and 6 ; township 56, range 6, all west of the fourth meridian. |
| Wheeler, A. O. | Calgary, Alta. | Topographer of the Department of the Interior. Survey of the Rocky Mountains. |
| Wilkins, F. W. | Norwood, Ont. | Contract No. 38 of 1904. Subdivision of townships 42, ranges 8 and 9 ; township 43, range 8 ; township 40, range 10 ; and townships 39, ranges 9, 10, 11 and 12 ; traverse of Battle river in township 42, range 10, all west of the fourth meridian. |

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APPENDIX No. 2 TO THE REPORT OF THE SURVEYOR GENERAL.

SCHEDULE of Dominion Land Surveyors employed, and work executed by them, from
January 1, 1905, to June 30, 1905.

| Surveyor. | Address. | Description of Work. |
|-------------------------|----------------------------|--|
| Aylsworth, C. F. | Madoc, Ont. | Day work of 1905. Near Fort Pelly. No returns. |
| Beatty, David | Parry Sound, Ont. | Day work of 1905. Battleford district. No returns. |
| Belanger, P. R. A. | Ottawa, Ont. | Supervision of surveys, 1905. |
| Belleau, J. A. | Ottawa, Ont. | Exploration survey of three and a half million acres, grant to the Dominion Government 'in that portion of the Peace River district of British Columbia lying east of the Rocky Mountains and adjoining the North-west Territories of Canada.' No returns. |
| Bray, E. | Oakville, Ont. | Day work for 1905. Between Shoal and Manitoba lakes. No returns. |
| Bray, L. T. | Amherstburg, Ont. | Day work of 1905. Retracement and part subdivision in townships 15 and 16, range 16, both west of the principal meridian. |
| Cautley, R. W. | Edmonton, Alta. | Survey of sixteenth base line between fifth and sixth meridian. |
| Côté, J. L. | Pakan, Alta. | Contract No. 13 of 1905. North-east of Edmonton. No returns. |
| Deans, W. J. | Brandon, Man. | Contract No. 8 of 1905. Near Sounding creek, Alta. No returns. |
| Ducker, W. A. | Winnipeg, Man. | Survey of east outlines in townships 7, ranges 11 and 12, and township 8, range 12 and centre line in township 8, range 11, all east of the principal meridian. |
| Driscoll, A. | Edmonton, Alta. | Survey of seventeenth base line across ranges 1 to 7, west of the fifth meridian. |
| Edwards, Geo. | Lacombe, Alta. | Contract No. 10 of 1905. Near Sullivan lake. No returns. |
| Fairchild, C. C. | Brantford, Ont. | Day work of 1905. Near Stony Indian reserve, Rocky Mountains. No returns. |
| Fawcett, Thos. | Niagara Falls, Ont. | Contract No. 11 of 1905. North of Beaver Hills. No returns. |
| Fontaine, L. E. | Levis, Que. | Day work of 1905. Near White lake, Alberta. No returns. |
| Francis, J. | Poplar Point, Man. | Day work of 1905. South of Porcupine Mountains, Manitoba. No returns. |
| Grover, G. A. | Ottawa, Ont. | Day work of 1905. Retracement and part subdivision of township 21, range 3, east of the principal meridian. |
| Hopkins, M. W. | Hamilton, Ont. | Contract No. 15 of 1905. North-east of Edmonton. No returns. |
| Hubbell, E. W. | Ottawa, Ont. | Day work of 1905. Re-surveys in vicinity of the third meridian. No returns. |
| Johnson, A. W. | New Westminster, B.C. | Day work of 1905. Survey of south limit of railway belt in British Columbia. No returns. |
| Knight, R. H. | Bruce Mines, Ont. | Contract No. 9 of 1905. Near Sullivan lake. No returns. |
| Lemoine, C. E. | Beaulieu, Que. | Contract No. 4 of 1905. North of Medicine Hat. No returns. |
| Lonergan, G. J. | Buckingham, Que. | Day work of 1905. Retracement of township 46, range 2, west of the fifth meridian. |
| Miles, C. F. | Toronto, Ont. | Day work of 1905. South of Sounding creek, Assa. No returns. |
| Molloy, J. | Winnipeg, Man. | Traverse of Roseau river in township 3, range 4, east of the principal meridian. Contract No. 16 of 1905. Near Bedford. No returns. |
| MacFarlane, W. G. | Toronto, Ont. | Inspector of surveys, 1905. Western section. |

SESSIONAL PAPER No. 25a

APPENDIX No. 2 TO THE REPORT OF THE SURVEYOR GENERAL.

SCHEDULE of Dominion Land Surveyors employed, and work executed by them, from January 1, 1905, to June 30, 1905.—*Continued.*

| Surveyor. | Address. | Description of Work. |
|-----------------------|-----------------------|--|
| McGrandle, H..... | Huntsville, Ont. | Contract No. 3 of 1905. North of Medicine Hat. No returns. |
| Nash, T. S. | Ottawa, Ont..... | Inspector of surveys, 1905. Western central section. |
| O'Hara, W. F..... | Ottawa, Ont. | Contract No. 6 of 1905. Near Sounding creek. No returns. |
| Parsons, J. L. R..... | Toronto, Ont. | Contract No 1. of 1905. Survey of east outlines of townships 5, 6, 7 and 8, range 22 and subdivision of townships 7 and 8, ranges 19, 20, 21 and 22, all west of the second meridian. |
| Ponton, A. W..... | MacLeod, Alta. | Contract No. 7 of 1905. East of Hand hills. No returns. |
| Proudfoot, H. B..... | Toronto, Ont. | Contract No. 2 of 1905. North of Medicine Hat. No returns. |
| Rinfret, Raoul | Edmonton, Alta. | Contract No. 5 of 1905. North of Medicine Hat. No returns. |
| Ross, Geo. | Welland, Ont. | Day work of 1905. Retracement of township 27, range 12, and township 29, range 25, both west of the second meridian. |
| Ross, J. E..... | New Westminster, B.C. | Day work of 1905. Survey of south limit of railway belt in British Columbia. The subdivision of townships 20, ranges 19 and 20 and townships 21, ranges 20 and 21, all west of the sixth meridian. |
| Roy, G. P..... | Quebec, Que. | Contract No. 12 of 1905. North of Alexander Indian reserve. No returns. |
| Saint Cyr, A..... | Ottawa, Ont. | Survey of nineteenth base line across ranges 15 to 24, west of the fifth meridian. |
| Saunders, B. J..... | Regina, Sask. | Survey of the fifteenth base line across ranges 5 to 20, west of the fifth meridian. |
| Selby, H. W..... | Toronto, Ont. | Survey of township outlines north-west of Athabaska Landing. No returns. |
| Tyrrell, J. W..... | Hamilton, Ont. | Contract No. 14 of 1905. North-west of Saddle lake. No returns. |
| Wallace, J. N..... | Hamilton, Ont. | Day work of 1905. Survey of north and east outlines in townships 68 and 69, range 1, and north outlines in townships 68, ranges 2 and 3, west of the fifth meridian; and east outlines of townships 73 and 74, range 13, west of the sixth meridian. |
| Warren, Jas. | Walkerton, Ont. | Day work of 1905. Southeast of Johnson lake. No returns. |
| Weekes, M. B..... | Ottawa, Ont. | Day work of 1905. Survey of the tenth base line across ranges 19 to 21; and twelfth base line across ranges 27 to 32, both west of the principal meridian. |
| Wheeler, A. O..... | Calgary, Alta. | Topographer of the Department of the Interior. Survey of the Rocky Mountains. |

APPENDIX No. 3 TO THE REPORT OF THE SURVEYOR GENERAL.

SCHEDULE showing for each surveyor employed on township surveys during 1904, the number of miles surveyed of township subdivision lines, township outlines, traverse of lakes and rivers and resurvey, also cost of same.

| Surveyor. | Miles of Subdivision. | Miles of Outlines. | Miles of Traverse. | Miles of Resurvey. | Total Mileage. | Total Cost. \$ cts. | Cost per Mile. \$ cts. | Method of Execution. |
|---------------------|-----------------------------|--------------------------|--------------------------|--------------------------|-------------------|------------------------|------------------------------|----------------------|
| Abrey, G. B. | 473.56 | 12.00 | 135.44 | 4.00 | 625.00 | 16,321.78 | 26.11 | Contract. |
| Aylen, J. | 237.53 | | 1.38 | 45.44 | 284.35 | 8,851.65 | 31.13 | " |
| Aylsworth, C. F. | 25.80 | | 0.50 | 128.40 | 154.70 | 9,122.31 | 58.97 | Day work. |
| Beatty, D. | 1,770.07 | 75.27 | 212.49 | 64.25 | 2,122.08 | 22,757.32 | 10.72 | Contract. |
| Beatty, W. | 357.64 | | 27.58 | | 385.22 | 2,743.13 | 7.12 | " |
| Bolton, L. | 278.04 | | 45.65 | 30.32 | 354.01 | 6,623.67 | 18.71 | " |
| Belanger, P. R. A. | | | | 2,765.75 | 2,765.75 | 19,071.68 | 6.89 | Day work. |
| Boswell, E. J. | | | | 6.30 | 6.30 | 253.15 | 40.18 | " |
| *Bourgault, A. | 168.00 | | | 12.00 | 180.00 | 4,932.25 | 27.40 | Contract. |
| *Bourgault, C. E. | 120.42 | 6.02 | 5.21 | 12.02 | 143.67 | 4,366.15 | 30.39 | " |
| *Bowman, H. J. | 660.10 | | 41.63 | 14.00 | 715.73 | 5,137.54 | 7.18 | " |
| Bray, E. | | 91.00 | | | 91.00 | 10,074.08 | 110.70 | Day work. |
| Bray, L. T. | | | 4.50 | 504.00 | 508.50 | 5,870.97 | 11.55 | " |
| *Carbert, J. A. | 347.30 | | 65.25 | 6.00 | 418.55 | 4,672.41 | 11.16 | Contract. |
| Cautley, R. W. | 255.51 | | 74.94 | 14.10 | 344.55 | 7,575.29 | 21.99 | " |
| *Cavana, A. G. | 388.57 | 31.38 | 66.72 | 16.92 | 503.59 | 12,609.30 | 25.04 | " |
| Charlesworth, L. C. | 1.30 | | | | 1.30 | 229.50 | 176.54 | Day work. |
| Côté, J. A. | 966.92 | | 131.65 | | 1,098.57 | 7,519.98 | 6.84 | Contract. |
| *Côté, J. L. | 484.18 | | 99.11 | 47.00 | 630.29 | 15,936.73 | 25.28 | " |
| †Craig, J. D. | | | | | | 6,038.59 | | Day work. |
| *Dalton, J. J. | | | 59.30 | 234.50 | 293.80 | 7,025.95 | 23.91 | " |
| Deans, W. J. | 13.00 | | 13.19 | 133.86 | 160.05 | 1,084.07 | 6.77 | Contract. |
| Dickson, J. | 167.63 | | 86.19 | 23.29 | 277.11 | 6,098.31 | 22.01 | " |
| Drummond, T. | 398.57 | 6.00 | 197.88 | 12.04 | 614.49 | 14,760.02 | 24.02 | " |
| Dumais, P. T. C. | 262.90 | 6.11 | 18.42 | 82.59 | 370.02 | 10,372.70 | 28.03 | " |
| Edwards, G. | 293.77 | | 39.97 | | 333.74 | 8,747.68 | 26.21 | " |
| *Fairchild, C. C. | 598.98 | | 144.43 | 53.58 | 796.99 | 9,140.71 | 11.47 | " |
| *Farncomb, A. E. | 242.00 | | 13.92 | 12.08 | 268.08 | 7,191.22 | 26.82 | " |
| Fawcett, A. | 301.87 | | 115.00 | 28.98 | 445.85 | 8,847.84 | 19.85 | " |
| Fawcett, T. | 693.38 | | 293.33 | | 986.71 | 10,232.55 | 10.37 | " |
| Fontaine, L. E. | | 114.50 | | | 114.50 | 12,223.77 | 106.76 | Day work. |
| Francis, J. | | | 15.33 | 424.60 | 439.93 | 8,094.80 | 18.40 | Contract. |
| Gordon, M. L. | 567.27 | | 35.30 | 6.24 | 608.81 | 4,599.49 | 7.55 | " |
| Gordon, R. J. | 427.17 | 24.26 | 34.83 | 25.00 | 511.26 | 3,990.98 | 7.81 | " |
| Gore, T. S. | 514.61 | 19.56 | 82.23 | 60.51 | 676.91 | 15,694.96 | 23.19 | " |
| Grover, G. A. | 712.98 | 6.00 | 73.81 | 13.00 | 805.79 | 9,665.24 | 11.99 | " |

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| | | | | | | | | |
|-------------------|-----------|----------|----------|----------|-----------|------------|--------|-----------|
| Harvey, C. | 515.29 | 10.15 | 144.17 | 28.93 | 698.54 | 18,524.99 | 26.52 | " |
| Holcroft, H. S. | 290.58 | 12.00 | 22.46 | | 325.04 | 9,250.52 | 28.46 | " |
| *Hopkins, M. W. | 592.50 | 90.80 | 76.75 | 24.00 | 784.05 | 23,670.45 | 30.19 | " |
| Hubbell, E. W. | | | | 444.00 | 444.00 | 8,127.00 | 18.30 | Day work. |
| Johnson, A. W. | 36.00 | 7.00 | 75.00 | 18.00 | 136.00 | 5,665.93 | 41.66 | " |
| Kirk, J. A. | 1.65 | | | | 1.65 | 469.42 | 284.50 | " |
| Knight, R. H. | 318.25 | 74.35 | 79.36 | 363.95 | 835.91 | 19,148.17 | 22.91 | Contract. |
| Lemoine, C. F. | 333.94 | 12.07 | 275.19 | 18.14 | 639.34 | 12,127.18 | 18.97 | " |
| Lendrum, R. W. | 245.00 | | 47.06 | 7.05 | 299.11 | 4,451.95 | 14.88 | " |
| Loneragan, G. J. | | | 0.70 | 747.00 | 747.70 | 9,380.58 | 12.55 | Day work. |
| Martin, A. F. | 789.35 | 24.07 | 32.25 | 33.00 | 878.67 | 8,114.32 | 9.23 | Contract. |
| Michael, A. | 501.38 | 13.99 | 134.92 | 17.24 | 667.53 | 16,770.23 | 25.12 | " |
| *Miles, C. F. | 248.35 | 12.04 | 5.95 | 45.78 | 312.12 | 9,390.13 | 30.08 | " |
| Molloy, J. | 432.41 | | | 315.97 | 748.38 | 20,958.09 | 28.00 | " |
| *McFee, A. | 318.19 | | 48.71 | | 366.90 | 2,729.99 | 7.44 | " |
| *McGrandle, H. | 103.72 | 6.00 | 0.62 | | 110.34 | 3,065.14 | 27.78 | " |
| McLean, J. K. | 22.34 | 41.16 | | | 63.50 | 3,912.83 | 61.62 | Day work. |
| *Nash, T. S. | | | | | | 6,422.39 | | " |
| *O'Hara, W. F. | 293.00 | 12.00 | 10.00 | 6.00 | 321.00 | 12,514.84 | 38.99 | Contract. |
| *Phillips, E. H. | | | | | | 5,647.48 | | Day work. |
| *Ponton, A. W. | 191.36 | | 1.49 | 48.37 | 241.22 | 6,905.50 | 28.62 | Contract. |
| Proudfoot, H. B. | 586.55 | 18.08 | 69.14 | 136.64 | 810.41 | 20,538.86 | 25.34 | " |
| Rainboth, G. C. | 1,134.18 | 6.11 | 78.66 | 8.03 | 1,226.98 | 12,304.89 | 10.03 | " |
| Reilly, W. R. | 287.19 | | 66.98 | 4.49 | 358.66 | 9,572.81 | 26.69 | " |
| Reilly, W. R. | 79.00 | 24.00 | 3.00 | | 106.00 | 3,426.47 | 32.33 | Day work. |
| Richard, J. F. | 156.78 | 11.07 | 3.78 | | 171.63 | 5,164.22 | 30.09 | Contract. |
| *Rinfret, R. | 239.27 | 6.10 | 67.91 | 37.05 | 350.33 | 8,553.21 | 24.41 | " |
| Ross, G. | 750.44 | | 16.75 | | 767.19 | 5,376.42 | 7.01 | " |
| Ross, J. E. | 69.00 | 23.00 | 80.00 | 40.00 | 212.00 | 7,421.34 | 35.01 | Day work. |
| Roy, G. P. | 427.52 | 30.20 | 65.63 | 28.94 | 552.29 | 14,990.72 | 27.14 | Contract. |
| *Saint Cyr, A. | | 97.50 | | | 97.50 | | | Day work. |
| *Saint Cyr, J. B. | 380.40 | 28.77 | 174.64 | 17.78 | 601.59 | 13,133.21 | 21.83 | Contract. |
| Saunders, B. J. | 331.32 | | 9.47 | 24.22 | 365.01 | 10,997.29 | 30.13 | " |
| Selby, H. W. | 122.54 | | 36.14 | 6.00 | 164.68 | 4,255.64 | 25.84 | " |
| Selby, H. W. | | 103.00 | | | 103.00 | 18,060.96 | 175.35 | Day work. |
| Thomson, W. T. | 7.87 | | | | 282.72 | 4,069.98 | 14.45 | Contract. |
| *Tyrell, J. W. | 709.41 | | 73.60 | 201.25 | 282.72 | 18,039.14 | 14.10 | " |
| Wallace, J. N. | | | 273.51 | 296.34 | 1,279.26 | 16,399.71 | 96.90 | Day work. |
| Warren, J. | | 169.25 | | | 169.25 | 5,316.08 | 6.77 | Contract. |
| Watt, G. H. | 773.02 | | 12.11 | | 785.13 | 5,521.40 | | Day work. |
| Weekes, A. S. | 718.59 | | 26.90 | | 745.49 | 6,851.49 | 9.19 | Contract. |
| Weekes, M. B. | 386.51 | 12.00 | 120.01 | | 518.52 | 11,343.21 | 21.88 | " |
| Weekes, M. B. | | 48.50 | | | 48.50 | 3,751.25 | 77.35 | Day work. |
| Wilkins, F. W. | 366.10 | | 172.77 | | 538.87 | 7,328.62 | 13.60 | Contract. |
| | 24,488.15 | 1,285.31 | 1,440.81 | 7,698.94 | 37,913.21 | 728,141.82 | 19.21 | |

Total mileage, 37,913.21; Total cost, \$728,141.82; Cost per mile, \$19.21.

* Estimated, complete returns not yet received. + Inspection of contract surveys.

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APPENDIX No. 4 TO THE REPORT OF THE SURVEYOR GENERAL.

List of Dominion Land Surveyors who have been supplied with Standard Measures.

| Name. | Address. | Date of Appointment. | Remarks. |
|-------------------------|----------------------------------|----------------------------|---|
| Abrey, G. B..... | Toronto, Junction, Ont..... | April 14, 1872 | |
| Austin, G. F..... | Dewdney, Alta..... | " 14, 1872 | |
| Aylen, J..... | Aylmer, Que..... | May, 29, 1885 | |
| Aylsworth, C. F.... | Madoc, Ont..... | " 17, 1886 | |
| Barwell, C. S. W.. | Dawson, Yukon Territory,.... | Aug. 21, 1894 | |
| Bayne, G. A..... | Winnipeg, Man..... | April 14, 1872 | |
| Beatty, D..... | Parry Sound, Ont..... | " 14, 1872 | |
| Beatty, W..... | Delta, Ont..... | " 14, 1872 | |
| Belanger, P. R. A.. | Ottawa, Ont..... | May 17, 1880 | Surveys Staff Dept. of Int. |
| Belleau, J. A..... | "..... | " 15, 1883 | " " " |
| Bigger, C. A..... | "..... | Mar. 30, 1882 | Astronomer " |
| Bolton, L..... | Listowel, Ont..... | April 14, 1872 | |
| Boswell, E. J..... | Winnipeg, Man..... | Feb. 18, 1903 | |
| Bourgeault, A..... | St. Jean Port Joli, Que..... | Mar. 29, 1883 | |
| Bourgault, C. E..... | "..... | Feb. 21, 1888 | |
| Bourget, C. A..... | Ste. Adelaide de Pabos, Que..... | May 14, 1884 | |
| Bowman, H. J..... | Berlin, Ont..... | Feb. 16, 1888 | |
| Brabazon, A. J..... | Medicine Hat, Assa..... | May 12, 1882 | District Engineer, N.W.T. |
| Bray, S..... | Ottawa, Ont..... | Nov. 11, 1883 | Dep. of Indian Affairs. |
| Bray, E..... | Oakville, Ont..... | April 14, 1872 | |
| Bray, L. T..... | Amherstburg, Ont..... | Feb. 18, 1903 | |
| Bridgeland, M. P..... | Calgary, Alta..... | Mar. 10, 1905 | |
| Brodie, S..... | Fort Qu'Appelle, Assa..... | April 14, 1872 | |
| Brownlee, J. H..... | Victoria, B. C..... | " 15, 1887 | |
| Burke, W..... | Minnedosa, Manitoba..... | " 14, 1872 | |
| Burnet, H..... | Victoria, B. C..... | June 22, 1885 | |
| Burwell, H. M..... | Vancouver, B. C..... | Feb. 17, 1887 | |
| Carbert, J. A..... | Lacombe, Alta..... | May 12, 1880 | |
| Carroll, C..... | Prince Albert, Sask..... | April 14, 1872 | District Engineer, N.W.T. |
| Cautley, R. H..... | Edmonton, Alta..... | May 1, 1905 | |
| Cautley, R. W..... | "..... | Sept. 2, 1896 | |
| Cavana, A. G..... | Orillia, Ont..... | Nov. 16, 1876 | |
| Charlesworth, L. C..... | Regina, Assa..... | Feb. 27, 1903 | |
| Cleveland, E. A..... | Vancouver, B. C..... | June 27, 1899 | |
| Côté, J. A..... | Quebec, Que..... | May 14, 1884 | |
| Côté, J. L..... | Edmonton, Alta..... | Mar. 21, 1890 | |
| Cotton, A. F..... | New Westminster, B. C..... | May 11, 1880 | |
| Craig, J. D..... | Ottawa, Ont..... | Feb. 24, 1902 | |
| Dalton, J. J..... | Weston, Ont..... | April 17, 1879 | Dominion Topographical Surveyor. |
| Deans, W. J..... | Brandon, Man..... | May 13, 1886 | |
| Dennis, J. S..... | Calgary, Alta..... | Nov. 19, 1877 | Dominion Topographical Surveyor, Inspector of Irrigation and British Columbia Land Commissioner, C.P.R. |
| Denny, H. C..... | "..... | April 1, 1882 | |
| Desmeules, J. C..... | Murray Bay, Que..... | " 14, 1872 | |
| Dickson, H. G..... | Whitehorse, Yukon Territory.... | Mar. 19, 1889 | |
| Dickson, J..... | Fenelon Falls, Ont..... | April 14, 1872 | |
| Doupe, J..... | Winnipeg, Man..... | " 14, 1872 | |
| Doupe, J. L..... | "..... | Oct. 6, 1888 | Asst. Land Commissioner, C. P. R. |
| Drewry, W. S..... | Victoria, B. C..... | Nov. 14, 1883 | |
| Driscoll, A..... | Edmonton, Alta..... | Feb. 23, 1887 | District Engineer, N.W.T. |
| Drummond, T..... | Montreal, Que..... | June 24, 1878 | Dominion Topographical Surveyor. |
| DuBerger, C. C..... | Waterloo, Que..... | Nov. 17, 1881 | |
| Ducker, W. A..... | Winnipeg, Man..... | Mar. 30, 1883 | Swamp Land Commissioner. |
| Dumais, P. T. C..... | Hull, Que..... | " 29, 1882 | |
| Edwards, Geo..... | Thurso, Que..... | April 14, 1872 | |
| Ellacott, C. H..... | Regina, Assa..... | Feb. 22, 1899 | |
| Fairchild, C. C..... | Brantford, Ont..... | " 20, 1901 | |
| Farncomb, A. E..... | Regina, Assa..... | Mar. 12, 1902 | |
| Fawcett, T..... | Niagara Falls, Ont..... | Nov. 18, 1876 | Dominion Topographical Surveyor. |

SESSIONAL PAPER No. 25a

APPENDIX No. 4 TO THE REPORT OF THE SURVEYOR GENERAL.—*Con.*LIST of Dominion Land Surveyors who have been supplied with Standard Measures.—*Continued.*

| Name. | Address. | Date of Appointment. | | Remarks. |
|------------------------|-------------------------------|----------------------|----------|--|
| Fawcett, A. | Dawson, Yukon Territory. | Feb. | 22, 1893 | |
| Fontaine, L. E. | Levis, Que. | Aug. | 13, 1892 | |
| Foster, F. L. | Toronto, Ont. | " | 14, 1872 | |
| Francis, J. | Poplar Point, Man. | June | 17, 1875 | |
| Garden, J. F. | Vancouver, B. C. | May | 13, 1880 | |
| Garden, G. H. | Lethbridge, Alta. | April | 14, 1872 | |
| Garden, C. | Winnipeg, Man. | " | 14, 1872 | |
| Gauvreau, L. P. | Quebec, Que. | " | 14, 1872 | |
| Gibbon, J. | Dawson, Yukon Territory. | Feb. | 12, 1891 | |
| Gordon, M. L. | Toronto, Ont. | " | 18, 1904 | |
| Gordon, R. J. | Stirling, Alta. | Mar. | 12, 1902 | |
| Gore, T. S. | Victoria, B. C. | April | 19, 1879 | |
| Green, T. D. | Dawson, Yukon Territory. | May | 19, 1884 | |
| Grover, G. A. | Kingston, Ont. | Feb. | 18, 1904 | |
| Harris, J. W. | Winnipeg, Man. | April | 14, 1872 | City Surveyor, Winnipeg. |
| Harvey, C. | Indian Head, Assa. | Feb. | 17, 1904 | |
| Henderson, W. | Chilliwack, B. C. | Nov. | 17, 1883 | |
| Holcroft, H. S. | Toronto, Ont. | Feb. | 18, 1903 | |
| Hopkins, M. W. | Hamilton, Ont. | " | 20, 1901 | |
| Hubbell, E. W. | Ottawa, Ont. | May | 19, 1884 | Survey Staff, Dept. of Int. |
| James, S. | Toronto, Ont. | April | 14, 1872 | |
| Jephson, R. J. | Dawson, Yukon Territory. | May | 12, 1880 | |
| Johnson, A. W. | Kamloops, B. C. | Mar. | 12, 1902 | |
| Kirk, J. A. | Revelstoke, B. C. | May | 11, 1880 | |
| Klotz, O. J. | Ottawa, Ont. | Nov. | 19, 1877 | Dominion Topographical Surveyor, Astronomer, Dept. of the Interior. |
| Knight, R. H. | Bruce Mines, Ont. | Feb. | 18, 1904 | |
| Latimer, F. H. | Detroit, Mich. | " | 13, 1885 | |
| Laurie, R. C. | Battleford, Sask. | April | 27, 1883 | District Engineer, N.W.T. |
| Lawe, H. | Ottawa, Ont. | " | 14, 1872 | |
| Lemoine, C. E. | Quebec, Que. | Mar. | 31, 1882 | |
| Lendrum, R. W. | Strathcona, Alta. | May | 15, 1880 | |
| Lonergan, G. J. | Buckingham, Que. | Feb. | 28, 1901 | |
| Lucas, S. B. | Ponoka, Alta. | April | 14, 1872 | |
| Lumsden, H. D. | Ottawa, Ont. | " | 14, 1872 | |
| MacPherson, C. W. | Dawson, Yukon Territory. | Mar. | 7, 1900 | Director of Surveys, Y.T. |
| Magrath, C. A. | Lethbridge, Alta. | Nov. | 16, 1881 | Dominion Topographical Surveyor, Land Commissioner, Alberta Railway and Coal Co. |
| Malcolm, L. | Blenheim, Ont. | April | 14, 1872 | |
| Michaud, A. | Montreal, Que. | Feb. | 18, 1903 | |
| Miles, C. F. | Ottawa, Ont. | April | 14, 1872 | |
| Moberly, H. K. | Innisfail, Alta. | Feb. | 27, 1903 | |
| Molloy, J. | Rosser, Man. | April | 14, 1872 | |
| Moore, H. H. | Township York, Ont. | Feb. | 17, 1904 | |
| McArthur, J. J. | Ottawa, Ont. | " | 17, 1879 | |
| McFadden, M. | Neepawa, Man. | " | 14, 1872 | |
| McFarlane, W. G. | Toronto, Ont. | May | 19, 1905 | |
| McFee, A. | Innisfail, Alta. | Feb. | 19, 1879 | |
| McGrandle, H. | Huntsville, Ont. | May | 30, 1883 | |
| McKenna, J. J. | Dublin, Ont. | April | 14, 1872 | |
| McKenzie, J. | New Westminster, B.C. | Nov. | 18, 1888 | Dominion Lands Agent, New Westminster. |
| McLatchie, J. | Nelson, B.C. | April | 14, 1872 | |
| McLean, J. K. | Ottawa, Ont. | " | 1, 1882 | |
| McPherson, A. J. | Dawson, Yukon Territory. | Feb. | 21, 1901 | |
| McPhillips, G. | Windsor, Ont. | June | 17, 1875 | |
| McVittie, A. W. | Blairmore, Alta. | March | 12, 1902 | |
| Nash, T. S. | Morrisburg, Ont. | Feb. | 18, 1904 | |
| Ogilvie, W. | Ottawa, Ont. | April | 14, 1872 | |
| O'Hara, W. F. | Chatham, Ont. | Feb. | 19, 1895 | |
| Ord, L. R. | Winnipeg, Man. | April | 1, 182 | |

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APPENDIX No. 4 TO THE REPORT OF THE SURVEYOR GENERAL.—*Con.*

LIST of Dominion Land Surveyors who have been supplied with Standard Measures.—*Continued.*

| Name. | Address. | Date of Appointment. | | Remarks. |
|------------------------|---------------------------------|----------------------|----------|---|
| Parsons, J. L. R. | Toronto, Ont. | Feb. | 23, 1905 | Dominion Topographical Surveyor. |
| Patrick, A. P. | Calgary, Alta. | Nov. | 19, 1877 | |
| Pearce, W. | Calgary, Alta. | May | 10, 1880 | |
| Phillips, E. H. | Ottawa, Ont. | Feb. | 24, 1902 | District Engineer, N.W.T. |
| Ponton, A. W. | Macleod, Alta. | May | 18, 1881 | |
| Proudfoot, H. B. | Toronto, Ont. | March | 28, 1882 | |
| Rainboth, E. J. | Ottawa, Ont. | May | 19, 1881 | |
| Rainboth, G. C. | Aylmer, Que. | April | 14, 1872 | |
| Reid, J. L. | Ottawa, Ont. | " | 14, 1872 | |
| Reilly, W. R. | London, Ont. | Nov. | 17, 1881 | |
| Richard, J. F. | Ste. Anne de la Pocatière, Que. | May | 13, 1882 | |
| Rinfret, R. | Edmonton, Alta. | Feb. | 20, 1900 | |
| Ritchie, J. F. | Nelson, B.C. | Jan. | 7, 1889 | |
| Robertson, H. H. | Montmagny, Que. | April | 14, 1872 | |
| Roberts, S. A. | Victoria, B.C. | May | 16, 1885 | |
| Roberts, V. M. | Sturgeon Falls, Ont. | " | 17, 1886 | |
| Robinson, F. J. | Macleod, Alta. | Feb. | 22, 1900 | |
| Romtough, M. B. | Morden, Man. | April | 14, 1872 | |
| Rorke, L. V. | Sudbury, Ont. | Aug. | 13, 1891 | |
| Ross, G. | Welland, Ontario | Nov. | 21, 1882 | |
| Ross, J. E. | Kamloops, B.C. | Feb. | 12, 1901 | |
| Roy, G. P. | Quebec, Que. | Nov. | 17, 1881 | |
| Saint Cyr, J. B. | Ste. Anne de la Perade, Que. | Feb. | 17, 1881 | Dominion Topographical Surveyor Professor School of Practical Science, Toronto. |
| Saint Cyr, A. | Ottawa, Ont. | " | 17, 1887 | |
| Saunders, B. J. | Edmonton, Alta. | Nov. | 16, 1884 | Superintendent of Forestry. |
| Seager, E. | Rat Portage, Ont. | April | 14, 1872 | |
| Selby, H. W. | Wabigoon, Ont. | Nov. | 15, 1882 | District Engineer, N.W.T. |
| Sewell, H. de Q. | Toronto, Ont. | May | 16, 1885 | |
| Shaw, C. A. E. | Victoria, B.C. | " | 10, 1880 | Dominion Topographical Surveyor and District Engineer, N.W.T. |
| Speight, Thos. | Toronto, Ont. | Nov. | 16, 1882 | |
| Starkey, S. M. | Starkey's P. O., N.S. | April | 14, 1872 | City Engineer, Vancouver. |
| Stewart, G. A. | Calgary, Alta. | " | 14, 1872 | |
| Stewart, L. B. | Toronto, Ont. | Nov. | 22, 1882 | Topographer of the Department Interior. |
| Stewart, E. | Ottawa, Ont. | April | 14, 1872 | |
| Talbot, A. C. | Calgary, Alta. | May | 13, 1880 | Dominion Topographical Surveyor. |
| Thompson, W. T. | Fort Qu'Appelle, Assa. | Nov. | 19, 1877 | |
| Tracy, T. H. | Vancouver, B.C. | April | 14, 1872 | Dominion Topographical Surveyor. |
| Tremblay, A. J. | Les Eboulements, Que. | Feb. | 18, 1890 | |
| Towle, C. E. | Waterloo, Que. | April | 14, 1872 | Dominion Topographical Surveyor. |
| Turnbull, T. | Winnipeg, Man. | March | 29, 1882 | |
| Tyrrell, J. W. | Hamilton, Ont. | Feb. | 16, 1887 | Dominion Topographical Surveyor. |
| Vaughan, J. W. | Vancouver, B.C. | June | 11, 1878 | |
| Vicars, J. | Kamloops, B.C. | May | 17, 1886 | Dominion Topographical Surveyor. |
| Wallace, J. N. | Hamilton, Ont. | Feb. | 20, 1900 | |
| Warren, J. | Walkerton, Ont. | April | 14, 1872 | Dominion Topographical Surveyor. |
| Watt, G. H. | Ottawa, Ont. | Feb. | 24, 1902 | |
| Weekes, A. S. | Clinton, Ont. | " | 11, 1892 | Dominion Topographical Surveyor. |
| Weekes, M. B. | Ottawa, Ont. | " | 18, 1903 | |
| Wheeler, A. O. | Calgary, Alta. | Nov. | 21, 1882 | Dominion Topographical Surveyor. |
| White-Fraser, G. W. R. | Ottawa, Ont. | Feb. | 21, 1888 | |
| Wiggins, T. H. | Regina, Assa. | " | 18, 1896 | Dominion Topographical Surveyor. |
| Wilkins, F. W. | Norwood, Ont. | May | 18, 1881 | |
| Wilkinson, W. D. | Toronto, Ont. | Feb. | 22, 1893 | Dominion Topographical Surveyor. |
| Woods, J. E. | Frank, Alta. | Nov. | 14, 1885 | |

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APPENDIX No. 5 TO THE REPORT OF THE SURVEYOR GENERAL.

LIST of lots in the Yukon Territory of which surveys have been confirmed during the year ending June 30, 1905.

GROUP NO. 2.

| Lot No. | Area in Acres. | Surveyor. | Year of Survey. | Date of Approval. | Claimant. |
|---------|----------------|----------------------|-----------------|-------------------|---|
| 99 | 4.96 | T. D. Green..... | 1905.. | June 8, 1905.. | H. H. Norwood. |
| 107 | 50.3 | "..... | 1904.. | Nov. 28, 1904.. | C. H. Wells <i>et al.</i> , as trustees. |
| 108 | 8.87 | "..... | 1904.. | " 28, 1904.. | J. F. Patterson. |
| 109 | 22.23 | "..... | 1904.. | " 28, 1904.. | C. H. Wells <i>et al.</i> , as trustees. |
| 110 | 24.36 | "..... | 1904.. | " 28, 1904.. | " " |
| 113 | 50.43 | "..... | 1904.. | " 28, 1904.. | " " |
| 114 | 2.62 | "..... | 1904.. | " 28, 1904.. | " " |
| 115 | 51.65 | "..... | 1904.. | " 28, 1904.. | C. H. Wells, P. Ledieu and E. McAdam, trustees. |
| 123 | 51.65 | "..... | 1904.. | " 28, 1904.. | C. J. D. Colley and C. H. Wells. |
| 131 | 5.78 | "..... | 1904.. | " 28, 1904.. | C. H. Wells <i>et al.</i> , as trustees. |
| 173 | 51.65 | "..... | 1904.. | " 28, 1904.. | " " |
| 174 | 51.65 | "..... | 1904.. | " 28, 1904.. | " " |
| 177 | 27.83 | R. J. Jephson..... | 1904.. | Oct. 3, 1904.. | Mrs. E. H. Depter. |
| 178 | 48.78 | "..... | 1905.. | June 8, 1905.. | The Sister Superior of St. Mary's Hospital, Dawson. |
| 179 | 41.85 | "..... | 1905.. | " 8, 1905.. | The Sister Superior of St. Mary's Hospital, Dawson. |
| 195 | 13.09 | T. D. Green..... | 1904.. | Nov. 28, 1904.. | J. R. McDonald. |
| 196 | 51.65 | "..... | 1904.. | " 28, 1904.. | C. H. Wells <i>et al.</i> , as trustees. |
| 197 | 8.24 | "..... | 1904.. | " 28, 1904.. | " " |
| 198 | 51.65 | "..... | 1904.. | " 28, 1904.. | " " |
| 210 | 17.35 | "..... | 1904.. | " 28, 1904.. | John A. Hudson. |
| 215 | 50.818 | R. J. Jephson..... | 1904.. | July 11, 1904.. | C. N. Williams. |
| 237 | 50.76 | T. D. Green..... | 1904.. | Nov. 28, 1904.. | R. B. Ackerman. |
| 238 | 10.00 | C. S. W. Barwell.... | 1904.. | " 21, 1904.. | L. L. Stephens. |
| 244 | 47.81 | T. D. Green..... | 1904.. | " 28, 1904.. | E. McAdam, <i>et al.</i> |
| 258 | 45.91 | "..... | 1904.. | " 28, 1904.. | W. D. McKenzie <i>et al.</i> |
| 259 | 12.15 | "..... | 1904.. | " 28, 1904.. | H. D. Fountain. |
| 261 | 2.54 | R. J. Jephson..... | 1903.. | April 17, 1905.. | G. Vermurier. |
| 272 | 50.17 | T. D. Green..... | 1904.. | Nov. 28, 1904.. | A. LaLande. |
| 278 | 5.62 | C. S. W. Barwell.... | 1904.. | " 21, 1904.. | Thurner Townsend. |
| 285 | 43.47 | T. D. Green..... | 1904.. | " 28, 1904.. | C. H. Wells <i>et al.</i> , as trustees. |
| 286 | 9.87 | "..... | 1904.. | " 28, 1904.. | " " |
| 287 | 24.17 | T. D. Green..... | 1904.. | Nov. 28, 1904.. | C. H. Wells <i>et al.</i> , as trustees. |
| 288 | 50.49 | "..... | 1904.. | " 28, 1904.. | " " |
| 289 | 51.65 | "..... | 1904.. | " 28, 1904.. | " " |
| 290 | 15.49 | "..... | 1904.. | " 28, 1904.. | A. A. Douglas. |
| 299 | 11.47 | C. S. W. Barwell.... | 1905.. | April 17, 1905.. | O. R. Brener. |
| 300 | 4.02 | "..... | 1905.. | " 18, 1905.. | " " |
| 301 | 51.52 | T. D. Green..... | 1905.. | March 28, 1905.. | David W. Cullen. |
| 302 | 50.08 | C. S. W. Barwell.... | 1905.. | April 17, 1905.. | Dawson City Quartz Mining Co., Limited. |
| 303 | 36.44 | "..... | 1905.. | " 17, 1905.. | " " |
| 304 | 51.45 | "..... | 1905.. | " 17, 1905.. | " " |
| 305 | 37.03 | "..... | 1905.. | " 17, 1905.. | W. J. Rendell. |
| 319 | 31.70 | T. D. Green..... | 1905.. | July 6, 1905.. | L. A. Herdt. |
| 320 | 12.00 | A. J. McPherson.... | 1905.. | May 3, 1905.. | H. A. Stewart. |
| 327 | 1.52 | R. J. Jephson..... | 1905.. | June 26, 1905.. | Mrs. C. Goldstein. |
| 328 | 51.52 | "..... | 1905.. | " 26, 1905.. | " " |

GROUP No. 3.

| | | | | | |
|----|-------|--------------------|--------|-----------------|------------------|
| 27 | 40.27 | R. J. Jephson..... | 1905.. | June 23, 1905.. | Donald McKinnon. |
|----|-------|--------------------|--------|-----------------|------------------|

APPENDIX No. 5 TO THE REPORT OF THE SURVEYOR GENERAL.

LIST of Lots in the Yukon Territory of which Surveys have been confirmed during the year ending June 30, 1905.—*Concluded.*

GROUP No. 4.

| Lot No. | Area in Acres. | Surveyor. | Year of Survey. | Date of Approval. | Claimant. |
|---------|----------------|--------------------|-----------------|-------------------|---------------------|
| 11 | 20.74 | C. W. MacPherson.. | 1903.. | Aug. 5, 1904.. | Thos. Whelan. |
| 13 | 40.01 | " .. | 1903.. | Sept. 28, 1904.. | R. N. W. M. Police. |
| 14 | 9.99 | " .. | 1903.. | Nov. 12, 1904.. | Capt. John Fussell. |

GROUP No. 5.

| | | | | | |
|----|-------|--------------------|--------|-----------------|-------------------------------|
| 61 | 23.32 | H. G. Dickson..... | 1904.. | July 7, 1904.. | Robert Lowe & B. Lamoureux. |
| 62 | 43.39 | " .. | 1904.. | Aug. 1, 1904.. | Harry J. Miller & Frank Dake. |
| 63 | 47.24 | " .. | 1904.. | Nov. 28, 1904.. | Wm. Woodnay. |
| 64 | 33.63 | " .. | 1904.. | " 3, 1904.. | Miss Iter A. Board. |

GROUP No. 6.

| | | | | | |
|----|-------|--------------------|--------|-----------------|----------------------|
| 15 | 80.02 | H. G. Dickson..... | 1905.. | June 15, 1905.. | Survey Office, Y. T. |
| 16 | 80.01 | " .. | 1905.. | " 15, 1905.. | " |

GROUP No. 7.

| | | | | | |
|---|-------|---------------------|--------|------------------|---------------------|
| 8 | 40.01 | C. W. MacPherson .. | 1904.. | Sept. 28, 1904.. | R. N. W. M. Police. |
|---|-------|---------------------|--------|------------------|---------------------|

APPENDIX No. 6 TO THE REPORT OF THE SURVEYOR GENRAL.

LIST of Miscellaneous Surveys in the Yukon Territory of which returns have been received during the year ending June 30, 1905.

| Year. | Surveyor. | Description of Survey. |
|------------|--------------------|---|
| 1903... | A. J. McPherson .. | Reference traverse on McQueston River from the Stewart River to Haggart Creek. |
| 1903 | " .. | Reference triangulation in the Duncan District extending from the McQueston River to the Head of Mayo Lake. |
| 1904..... | " .. | Base Lines on Hight Creek and its tributaries Rudolph and MacRae Gulches. |
| 1904..... | " .. | Base Lines on Edmonton Creek and its tributary Battleford Creek |
| 1904..... | " .. | " Cascade Creek. |
| 1904 | " .. | " Steep .. |
| 1904..... | " .. | " Ledge .. |
| 1904..... | C. W. MacPherson.. | *Dawson & Whitehorse Road, Stewart Crossing to Yukon Crossing. |
| 1904..... | A. J. McPherson .. | Yukon River traverse, Moosehide to Thistle Creek. |

* In eleven sections.

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APPENDIX No. 7 TO THE REPORT OF THE SURVEYOR GENERAL

STATEMENT of work executed in the office of the chief draughtsman.

Returns of surveys examined :—

| | |
|--|-------|
| Township subdivision.. | 599 |
| Township outlines.. | 149 |
| Mineral claims.. | 53 |
| Correction and other miscellaneous surveys.. | 93 |
| Township plans completed for printing.. | 527 |
| Preliminary township plans prepared.. | 550 |
| Proofs of plans examined.. | 527 |
| Outline sketches prepared.. | 1,783 |
| Plans of Yukon lots received.. | 57 |
| Plans of miscellaneous Yukon surveys received.. | 9 |
| Tracings of Yukon survey plans made.. | 72 |
| Sectional maps revised but not reprinted.. | 19 |
| Sectional maps revised and reprinted.. | 10 |
| Sectional maps printed.. | 79 |
| Declarations of settlers received.. | 466 |
| Progress sketches received and filed.. | 850 |
| Miscellaneous plans and tracings made.. | 369 |
| Applications for various information dealt with, about.. . . | 1,055 |
| Field books received from record office and used in connection with office work.. | 2,829 |
| Plans received from record office and used in connection with office work.. | 962 |

P. B. SYMES,

Chief Draughtsman.

APPENDIX No. 8 TO THE REPORT OF THE SURVEYOR GENERAL.

STATEMENT of work performed in the Survey Records Office for the twelve months
ending June 30, 1905.

| | |
|--|--------|
| Files received and dealt with.. | 3,596 |
| Letters drafted.. | 3,412 |
| Reports, drafts, memos. to Council.. | 3 |
| Plans, tracings, &c., copied and compiled.. | 410 |
| Statutory declarations copied and mailed.. | 409 |
| Plans sent to agents, registrars, &c.. | 8,405 |
| Pages of field notes copied.. | 660 |
| Prints of plans received and stored.. | 55,763 |
| Original plans received and recorded.. | 897 |
| Original field books received and recorded.. | 554 |
| Letters written to agents, registrars, &c.. | 792 |
| Registered parcels mailed.. | 878 |
| Work done for Topographical Surveys Branch :— | |
| Books searched for.. | 2,995 |
| Books sent.. | 2,641 |
| Books returned.. | 2,302 |
| Plans searched for.. | 1,079 |
| Plans sent.. | 898 |
| Plans returned.. | 111 |
| Volumes sent.. | 38 |
| Volumes returned.. | 15 |

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In addition to the above, all the field books in the office, over 7,000, were removed from the vault and placed in the new steel cases furnished by the Eclipse Office Company.

Advantage was taken of the change necessitated by the new furniture to re-index and re-arrange all the record plans which now number over 11,000. A new index of the record plans numbered consecutively was made. All the printed plans were arranged and indexed.

During the year four members of the staff were working almost continuously on the maps prepared under Mr. Young's supervision, showing lands taken up and lands yet available in the even and odd numbered sections respectively of the Northwest Territories and Manitoba.

C. J. STEERS,
In charge of Survey Records.

APPENDIX No. 9 TO THE REPORT OF THE SURVEYOR GENERAL.

STATEMENT of work executed in the Photographic Office during the twelve months ending June 30, 1905.

FOR THE DEPARTMENT OF THE INTERIOR.

| | 4 x 5 | 5 x 7 | 8 x 10 | 10 x 12 | 11 x 14 | 16 x 18 | 18 x 20 | 24 x 30 | 30 x 36 | 36 x 42 | 42 x 48 | Total. |
|-------------------------|-------|-------|--------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| Wet plate negatives... | 22 | ... | 83 | ... | 66 | 719 | 31 | ... | ... | ... | ... | 921 |
| Zinc transfers..... | ... | ... | 3 | ... | 9 | ... | 663 | ... | ... | ... | ... | 675 |
| Dry plate negatives.... | 156 | 94 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 250 |
| Bromide prints..... | ... | 232 | 74 | 9 | 627 | ... | 212 | 23 | 51 | 1 | 5 | 1,234 |
| Vandyke prints..... | ... | ... | 22 | ... | 16 | ... | 53 | 190 | 120 | 2 | ... | 403 |
| Silver prints..... | 271 | ... | 447 | ... | 4 | ... | ... | ... | ... | ... | ... | 722 |
| Coloured photographs.. | ... | ... | 79 | ... | ... | ... | ... | ... | ... | ... | ... | 79 |
| Transparencies..... | ... | ... | ... | ... | 12 | ... | ... | ... | ... | ... | ... | 12 |
| Total | 449 | 326 | 708 | 9 | 734 | 719 | 959 | 213 | 171 | 3 | 5 | 4,296 |

FOR THE GEOLOGICAL SURVEY.

| | 4 x 5 | 5 x 7 | 8 x 10 | 10 x 12 | 11 x 14 | 16 x 18 | 18 x 20 | 24 x 30 | 30 x 36 | 36 x 42 | 42 x 48 | Total. |
|------------------------|-------|-------|--------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| Dry plate negatives... | 120 | 36 | ... | ... | ... | ... | ... | ... | ... | ... | ... | 156 |
| Bromide prints..... | ... | ... | ... | ... | 50 | ... | ... | ... | ... | ... | ... | 50 |
| Silver prints..... | 169 | 58 | 18 | ... | ... | ... | ... | ... | ... | ... | ... | 244 |
| Total | 288 | 94 | 18 | ... | 50 | ... | ... | ... | ... | ... | ... | 450 |

SESSIONAL PAPER No. 25a

APPENDIX No. 10 TO THE REPORT OF THE SURVEYOR GENERAL.

STATEMENT of work executed in the Lithographic Office during the twelve months ending June 30, 1905.

| Month. | Maps. | | Township Plans. | | Forms, &c. | |
|-----------|-------|---------|-----------------|---------|------------|---------|
| | No. | Copies. | No. | Copies. | No. | Copies. |
| 1904. | | | | | | |
| July | 7 | 1,425 | 22 | 2,200 | 3 | 1,600 |
| August | | | 49 | 4,900 | 3 | 2,800 |
| September | 4 | 1,200 | 40 | 4,000 | 5 | 3,000 |
| October | 17 | 8,450 | 54 | 5,400 | 2 | 450 |
| November | 5 | 600 | 34 | 3,400 | 5 | 3,250 |
| December | 26 | 13,225 | 30 | 3,000 | 6 | 2,300 |
| 1905. | | | | | | |
| January | 24 | 5,100 | 14 | 1,400 | 4 | 6,026 |
| February | 17 | 1,450 | 66 | 6,600 | 3 | 2,600 |
| March | 19 | 1,010 | 49 | 4,900 | | |
| April | 2 | 1,000 | 43 | 4,300 | 6 | 2,050 |
| May | 6 | 2,400 | 64 | 6,400 | 1 | 3,000 |
| June | 2 | 3,900 | 59 | 5,900 | 6 | 6,800 |
| Totals | 129 | 39,760 | 524 | 52,400 | 44 | 33,876 |

SUMMARY OF WORK FOR THE YEAR.

| | No. of Jobs. | No. of Copies. | No. of Impressions. | Cost. | Cost per Map or Form. |
|------------|--------------|----------------|---------------------|------------|-----------------------|
| Maps | 129 | 39,760 | 82,510 | \$2,682 85 | 20.79 |
| Townships | 524 | 52,400 | 53,200 | 3,458 99 | 6.31 |
| Forms, &c. | 44 | 33,876 | 33,876 | 557 31 | 12.66 |
| Totals | 697 | 126,036 | 169,586 | \$6,699 15 | |

APPENDIX No. 11 TO THE REPORT OF THE SURVEYOR GENERAL.
REPORT OF C. F. AYLSWORTH, D.L.S.

SURVEYS IN MANITOBA DURING SEASON OF 1903.

MADOC, March 9, 1905.

E. DEVILLE, Esq., LL.D.
Surveyor General,
Ottawa.

SIR,—I have the honour to report that pursuant to instructions from you dated April 25, 1903, I arrived in Winnipeg on May 4, and the next day I went to Teulon to dispose of the transport outfit stored there by D.L.S. St. Cyr. After selling a portion of it I despatched B. Langly with the balance to Stuartburn. Upon my return to Winnipeg, I received instructions from you to dispose of some transport articles in the hands of D.L.S. Bourne, which I did ; a report of which I have already made to you.

I then went to Stuartburn and from there to township 1, range 14, east of the principal meridian, which township I was to subdivide but found it was impossible to do this for water, such work only being possible in the winter when the ground is frozen. From there I went and made a traverse of Whitemouth river in township 11, range 11, east of the principal meridian, after finding that it was impossible to subdivide township 10, range 11, east of the principal meridian during the summer months. After completing this traverse I proceeded to townships 27 and 28 in range 29A, west

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of the principal meridian, to subdivide them. I arrived there on June 24 and completed the subdivision of them on July 30. I reached the township by a good trail from Grand View. I found the soil in these townships to be excellent except in the extreme north end of township 28 where the surface was somewhat damaged by some large muskegs and sloughs; and in the extreme south end of township 27 where sections 11, 12, 13 and 14 are broken by Boggy creek ravine. The land must have had the reputation abroad of being of a very desirable quality as people were rushing in from all quarters to secure homesteads, and although every acceptable homestead quarter had been squatted upon previous to our arriving to subdivide the township, still almost every day after our arrival others would come along and ask us regarding the system of survey and whether we knew of any available land, and they were not discouraged by a negative reply, but would either endeavour to pre-empt or squat upon odd numbered quarters, upon one pretext or another. The greater portion of the land in these townships is scrubby prairie. There is no timber worthy of mention, I do not believe there would be any more than would suffice for temporary building and fencing, and one winters supply for fuel. There is scarcely any available hay in these townships. The water is all good and fresh with a small percentage of alkali, but a permanent supply may be had in abundance by digging from twenty to forty feet. All the slough brooks shown in the notes go dry during the summer months of dry seasons. Boggy creek which passes through the south end of township 27 is a deep sluggish flowing stream about twenty-five links wide, of no commercial value except as a source of water supply for stock, and as far as my observation extended I saw no site for a water power. The climate is as satisfactory as in any other quarter of Manitoba. Although we had a severe snow storm on September 12, while I was there, that storm was general and caused a great amount of damage to crops and stock. I saw some very good samples of many varieties of grain and vegetables grown here and altogether I consider it a decidedly good district for mixed farming.

While we were engaged at this work, the Canadian Northern railway contractors were encamped in Boggy creek valley at the south end of township 27, grading that railway and tracklaying was being extended from Grand View. At a point about five miles east of Boggy creek railway crossing a little village with a pretentious grain elevator was rapidly developing into business-like proportions, thus displaying their confidence in the productiveness of the adjoining district. On account of the heavy grading and deep cutting in descending to and ascending out of Boggy creek valley, the contractors were detained at this point about four months, but I venture the assertion that the view to be had from the train at a point just entering this valley from the east will be one of the most desirable and attractive along the line of the Canadian Northern railway between Winnipeg and Edmonton.

I then left for Valley river to survey the north boundary of township 26 in ranges 25 and 26 west of the principal meridian. I arrived at this work by following Mr. T. A. Burrows' lumber trail, passing along Valley river from the Indian reserve of that name. The reserve may be reached by excellent trails from both east and west. The soil along these two boundaries is generally a clay loam with clay subsoil and when cleared will be suitable for mixed farming, as good vegetables are grown on the reserve four miles south. The country is now densely timbered with poplar and spruce, and the surface is rolling. The water in Valley river is fresh and rapid flowing, but I did not observe any sites for developing power. In the lakes the water is of a very alkaline nature. I fancy this district in the hills is more subject to thunderstorms than the prairie and at present rather more inclined to summer frosts.

Mr. Burrows is carrying on extensive lumbering operations in this district and further to the north and floating his logs down Valley river to his large saw mill in Grand View.

On finishing this work I left for township 27 in ranges 29 and 30 to establish all the section and quarter section corners in those townships that D.L.S. Belanger did not find during his examination the previous season.

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After the completion of these townships on October 14, I left, pursuant to instructions dated September 25, to survey sections 4 and 22 in township 26, range 26 west of the principal meridian. I first surveyed the south boundary of this township and then proceeded to survey those two sections which I completed on October 31.

I may be permitted to report, without going into details, that I was seriously handicapped during this season by a very inefficient party.

On November 2, I broke camp, stored my outfit in Grand View, and, after discharging my party, I arrived home on the 10th.

I have the honour to be, sir,

Your obedient servant,

(Sgd.) C. F. AYLSWORTH, Jr.,
D.L.S.

APPENDIX No. 11a TO THE REPORT OF THE SURVEYOR GENERAL.
REPORT OF C. F. AYLSWORTH, D.L.S.

SURVEYS IN MANITOBA.

MADOC, March 6, 1905.

E. DEVILLE, Esq., LL.D.,
Surveyor General,
Ottawa.

SIR,—I have the honour to inform you that pursuant to instructions dated December 30, 1903, I left Madoc on January 12 to resurvey and re-mark the corners in Rivertown, or what is now called Icelandic river, as the post office there is called by that name.

I proceeded to Winnipeg, and after making some arrangements and engaging one man, I went by train to Winnipeg Beach, and from there I proceeded by sleigh to Gimli; and thence to Icelandic river. I found the winter roads to be in excellent condition for travelling on account of the immense freighting of fish that passes over them at this season from that portion of Lake Winnipeg lying north of Icelandic river. I am told that some of the freighters go as far north as within fifty miles of Norway House. The teamsters and horses on these trips suffer a great amount of hardship on account of lack of accommodation along the route. The population of Icelandic river is exclusively Icelandic, and they do not indulge in any farming worthy of mention; depending almost entirely upon the fishing resources of Lake Winnipeg. The people in the settlement adjacent to Icelandic river state that they do not desire to clear their homesteads of the heavy growth of timber that they are generally covered with, until they have been supplied with railway facilities for shipping this valuable timber to market and they are employing every available means of impressing upon the different railway companies their wants in this respect. And it has been suggested that the settlers would cut out the right of way provided a company would agree to construct a railway to afford them means of intercourse with the outside world.

Although I was informed that the original corners were lost, I found, as the notes of the resurvey of this village site will show, many of the original corners, causing the work, from the surveyor's standpoint, to be satisfactory. Some of the buildings erected, were found to be somewhat out of the position they were intended to occupy because the owners had made some measurements to locate their lots on the basis that the streets were one chain wide, whereas they are in reality one chain and a half wide. I began the resurvey of this village by first locating carefully the meridian along the

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east side of section 20, township 23, range 4 east of the principal meridian as the village is situate on the southwest quarter of section 21 and the southeast quarter of section 20. As the meridian quarter post and that at the southeast angle of section 20 had disappeared years ago, I was compelled to commence the location of the meridian at the original quarter post I found at the middle of the east side of section seventeen, and from this point I ran the meridian north to the original post I found at the northeast angle of section 20. I then divided the chained distance thus found equally between the three quarter-sections, making due allowance for the road and established the lost corners and renewed the corners I found, according to the methods prescribed. During the progress of this survey I found that the original survey had been executed in an accurate manner. I planted axe hewn tamarac and spruce posts three inches square and twenty-four inches long, marked with a scribing iron, at all the corners excepting at one of the corners of all street intersections where I planted an iron post, marked with a cold chisel according to the directions prescribed. After completing the planting of the posts I made a traverse of Icelandic river across the village connecting in passing with the production of each street, all of which is shown on the plan and notes of survey.

There is a creamery in the village operated by private individuals and patronized by the settlers. There are two general stores, a good blacksmith shop, two boarding houses, a good school and a farmers hall. While we were engaged on this survey we practically lived on coffee and fish, being I may be permitted to assure you a very agreeable substitute for the surveyor's usual ration of pork and beans. As coffee-makers I am firmly convinced that the Icelandic ladies would easily secure first prize in any competition in the art. They buy the coffee bean in the raw state and put it through the different processes of roasting and grinding to powder in just such quantities as they desire for each serving, which when steeped by them in their own inimitable style is simply irresistible.

Having completed the survey we proceeded to Winnipeg to organize a party to re-mark township 21, range 7, west of the principal meridian in which I was delayed on account of some very heavy snow storms. The outfit was delayed nearly a week in arriving at Reburn on account of washouts along the line on the Canadian Northern railway.

Having organized a party on April 18, I left Winnipeg by Canadian Pacific railway for Reburn and proceeded to township 21, range 7 west of the principal meridian, which we re-posted. There are a number of settlers along the lake shore in this township who are engaged almost entirely in stock raising, but wherever farming, such as the cultivation of grain and vegetables has been attempted singular success has rewarded their efforts. Although the settlement in this township was confined to the lake shore along what is known as the Colonization road, which enters at section one and passes almost diagonally across the township, and leaves it near the northwest angle of section 30, before we had completed the survey every available homestead quarter had been entered for. There is a great amount of muskeg throughout the north end of this township, but that did not deter the people. On June 9 we moved into and proceeded to re-post township 21, range 6, west of the principal meridian which we completed on August 1. It is generally a dense scrubby poplar *brulé* excepting in the west tier of sections there are large areas of muskeg, which, in many places, are impassable and I cannot conceive how the surveyors in the original survey passed over them if they contained as much water then as now, but I am rather inclined to think that they did not, and the fact that what is locally known as Chippewa lake, near the northeast angle of section 6 is not shown on the original plan would appear to lend force to that theory although Chippewa creek, the outlet of this lake, appears to have an uninterrupted rapid flow of water emptying into Lake Manitoba.

There are many exposures of limestone throughout the south end of this township and when this district has been supplied with railway facilities it will be found a very valuable asset for building stone and the manufacture of lime. Whether it is on

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account of the proximity of the limestone formation or not, I found that the vegetables grown in this district wintered better and were of a finer flavour than any I had yet seen in Manitoba. These qualities in the vegetables were known in Winnipeg, where they always command superior prices. Another special feature of this district was its capacity for growing timothy hay. So it may be inferred that development is now only delayed by the absence of railway facilities; the nearest railway being the Canadian Northern at Oak Point, twenty-five miles distant. When it became known that we were re-surveying this township, land seekers were arriving every day and upon our completion of the township every homestead quarter was entered for that was at all desirable, and many regrets expressed that more land was not available.

The original survey and telegraph line of the Canadian Pacific railway passes through this township and some of the old telegraph wire may be seen strung along the line yet. From about the east boundary of section 21, the old cleared right of way is now used as a trail to the narrows of Lake Manitoba, but it is almost impassable in some places. I did not experience any difficulty in finding the corners in this township except passing over the dangerous muskegs.

After completing this township and pursuant to instructions from you, dated May 6, I started for West Selkirk en route to survey a 'settlement at Manigotogan (Bad Throat) river.' We arrived at Selkirk by following the trail passing through Minnewakan, Clarkleigh, St. Laurent, Woonona, Oswald, Stonewall, thence across the bog a short distance north of Stony mountain to Lower Fort Garry and West Selkirk. Upon making diligent inquiry I found that the transport outfit should be dispensed with here, and that we would go by steamer to Manigotogan river and to this end I placed the horses on pasture and stored the remainder of the transport outfit. On the evening of August 13, we left by steamer for Manigotogan river. Upon our arrival there we were agreeably surprised at the activity of the settlement. Here we found a sawmill running night and day, employing about one hundred hands, illuminated by electricity and turning out between ten and fifteen thousand feet of sawn lumber per day, which is delivered in barges down to Selkirk. While we were there the James Drake Lumber Company, owners of the mills, were building a new steam tug to bring in supplies and deliver lumber to Selkirk. A pleasing feature of this district that soon became known to us was that we were in the land of the huckleberry, for here were many low rocky ridges on which they were to be had in abundance.

We commenced the survey of the settlement lots by first making a traverse of the north shore of Manigotogan river across the district proposed to be subdivided into a group of settlement lots. Subsequently I adopted this traverse as the location for the proposed road through the settlement. On the south side of the river I adopted some of the base lines as the most desirable location for the proposed road as it seemed to afford the most practicable route for construction and also did not cut up the good land along the river bank which was better adapted for agricultural purposes. I endeavoured to block out this group of settlement lots on bearings so as to give as little disturbance as possible to subsequent subdivision of the surrounding district into townships and sections. I connected the group with the Hole river Indian reserve by commencing at the post marking the southwest angle of the reserve and followed the eastern limit of timber berth No. 544 to where the same intersects the easterly production of the northerly limit of lot number one as shown on the plan.

I have executed this survey in accordance with your instructions and the instructions prescribed in the Manual.

After leaving the banks a few chains on the north side of Manigotogan river, the land will not be suitable for agricultural purposes until a large amount of money has been expended upon the drainage of it. It was drawn to my attention by Mr. James Drake (of the Drake Lumber Company) that they were desirous of seeing the settlement subdivided for the convenience of the settlers who when they become owners of the land would then become attached to the neighbourhood and thus their services would be always available to him, but they did not want their mill site to be disturbed,

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and they also did not want to be disturbed in the privilege they have enjoyed of using the cove along the front of lot No. 8 to harbour their logs held in booms, previous to cutting them. Captain William Robinson, who also carries on lumbering operations in this district floats his logs, inclosed in booms into the cove at the east side of the point at the front of the west side of lot No. 9 previous to loading them by a steam propelled endless chain carrier onto barges. With a view to facilitating these privileges to each of these lumbermen and at the same time, in order that the occupants of lots 8 and 9 may have access to the river, I have placed a road allowance from the main road to the river front at station 9 on lot 9. These lumbering operations are only temporary here and will be abandoned when their limits are depleted of timber and then these strips of land between the road and the river could become the absolute property of the owners of land for which they form the front.

After the completion of this survey on October 5, we returned by steamer to West Selkirk, where we collected our outfit and on the 11th proceeded to township 11, range 7, east of the principal meridian where we made a restoration survey of the south boundary of that township. On the night of the 17th we had the heaviest rain and thunderstorm I think I ever witnessed, and as we were encamped on somewhat low ground, our quarters became anything but comfortable.

On the 18th I broke camp and left for Winnipeg. I went in by one of the teams, which I sold and the remainder of the party came to Winnipeg via Tyndall. After discharging my party I arrived home on October 25.

I have the honour to be, sir,

Your obedient servant,

(Sgd.) C. F. AYLSWORTH, Jr.,

D.L.S.

APPENDIX No. 12 TO THE REPORT OF THE SURVEYOR GENERAL. REPORT OF P. R. A. BELANGER, D.L.S.

RENEWAL OF SURVEY MARKS IN EASTERN ASSINIBOIA.

OTTAWA, March 11, 1905.

E. DEVILLE, Esq., LL.D.,
Surveyor General,
Ottawa.

SIR,—I beg to submit the following general report concerning my survey operations during the past season.

In accordance with your instructions dated March 16, 1904, authorizing me to continue the restoration of survey monuments in the district of Assiniboia, I started from home on April 7, for Saltcoats where I had to get the transport outfit which I had left at that place for wintering, and I reached there on the 12th.

The next day I sent three men to take possession of the outfit and bring it to Yorkton, but before they could leave Saltcoats a heavy snow storm arose with a strong north wind which piled the snow in banks which proved too deep to pass through with carts and wagons which after a vain attempt to come through were obliged to return.

This storm was followed by a cold spell which compelled me to proceed to Yorkton by train to provide for hotel accommodation for my assistants and the 20 men who had been appointed on my party and whom I had instructed to meet me at that place on April 15.

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Here I had to wait with my party till the 21st, before the snow had melted sufficiently to allow me to bring my transport outfit from Saltcoats, but after this unavoidable delay I proceeded at once to my initial point in the Beaver hills, which I reached just in time to avoid the flood and the great thaw which rendered the roads impassable for several weeks.

I started work by restoring the survey marks of township 25, range 11, west of the 2nd meridian, and after having also restored those in the adjoining townships I worked southerly to township 23, range 12, and then turned westerly restoring the marks in township 23, ranges 12 to 19, when I decided to postpone the work for some time in order to perform the Willow Bunch surveys, before proceeding northerly.

On June 25, I proceeded to Willow Bunch via Regina, a distance of about 260 miles for the round trip. This journey together with the restoration of survey marks in eight townships which comprised all the surveys that had been made at that place kept me busied for a full month, and it was not before July 28 that I could resume operations in township 23, range 19, from which I worked northerly towards Quill lake restoring all old surveys comprised between ranges 16 and 20 as far north as township 33 inclusive. This work was completed by October 17, when I immediately went to Touchwood hills where I renewed monuments in townships 27 and 27A, ranges 13 and 14 after which I made the same operations in township 32, range 12, and then headed towards township 28, ranges 7 and 8, where I closed my season's operations on November 26.

Besides the renewal of surveys above mentioned, I also surveyed a small piece of land in actions 11 and 12 of township 26, range 17, which had been left unsurveyed, caused by change in Gordon's Indian reserve.

During the course of the season, I re-marked the corners in 65 townships in some of which they were almost entirely obliterated, principally those which had only been marked with wooden posts. As to those which had been marked by mounds and iron or wooden posts, the mounds though partly obliterated were easily found, but the wooden posts were so far gone that the markings on them could not be read. As to the iron posts, 50 per cent had been taken away.

In township 28, range 8, where there is a settlement of Galicians, none of the settlers had found the corners of their homesteads. They were so badly obliterated that it was only by running and measuring all the meridians and section chords that I could locate the charred or rotten remains of posts generally buried under a thick accumulation of hay, leaves, wood and moss.

All survey marks restored as far as possible according to the latest regulations of the Manual, but in a few cases, where these could not be followed, I proceeded as already explained at full length in my last year's report for the same kind of work.

Large errors were found in the position of monuments in several townships, and correction was generally applied where the land was vacant, but I regret to say that in township 23, ranges 11 and 12, two of these errors were such that no correction could be made without depriving the owners of land of the improvements made on their homesteads. These improvements consisted of a house and a stable in one case, whilst in the other they represented about 30 acres of land under cultivation. In these cases I did not venture to make any correction.

Many irregularities were also detected in the character of monuments as found on the ground compared with their description in the original field notes. Some of these being described as witness mounds in notes, proved to be regular mounds at true corners, and others shewn as true corner mounds in notes were nothing but witness mounds on the ground.

Irregularities were also discovered in the marking of witness mounds whose distance from true corners as shewn in notes is erroneous.

A memorandum accompanying my plans of renewal will indicate the location of all these errors and irregularities and show the corrections applied in each case.

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Double rows of marks for the same corners were also found in several townships, some of them being mounds made on lines surveyed according to the old system of survey, and re-surveyed later for the 3rd system and marked accordingly without destroying the monuments of the old system. Similar double marking had also been made by subdividers who having detected errors in their survey applied correction by erecting new monuments at the right places neglecting to destroy the wrong ones, or destroying them only partially.

The destruction of such erroneous marks is also shewn on my plans together with their distance from the right ones.

The country I passed over during the course of my operations in the Touchwood hills district was mostly vacant at the beginning of the season, but before the middle of the summer was over, settlers were coming in every day filling up the country so fast that tents and buildings under construction were to be seen in all directions over the land I re-marked, principally in the vicinity of the Canadian Pacific Railway known as the 'Pheasant Hills' branch which runs westerly across the southern part of the district and also along the proposed Grand Trunk Pacific Railway which will run south of Quill lakes.

As to the Willowbunch country, it is mostly vacant, being only occupied by ranchers, and so long as railway communication is not established in the immediate vicinity it is bound to remain in its present state which however may be called prosperous owing to the large quantities of cattle, horses and sheep which are raised at that place and sold at great profits.

I might state here that the large number of settlers who had come into the Assiniboia district since last year seemed quite satisfied and, I have no doubt, with perseverance will soon be in a prosperous condition.

Before closing this report, I am also pleased to state that, with a few exceptions the whole of my party gave me entire satisfaction, everybody trying his best to please by doing his work conscientiously. The great amount of work done during the season demonstrates also plainly the advantage of concentrating several survey parties under one chief in one camp, and such arrangement does not only insure rapidity of work but also reduces the expenses considerably.

From the 28th till the 30th November, I was occupied in discharging my party and making final arrangements for wintering my outfit, and disposing by auction sale articles considered unfit for further use, and on December 1, I boarded the train for home.

I have the honour to be, sir, your obedient servant,

P. R. A. BELANGER, *D.L.S.*

APPENDIX No. 13 TO THE REPORT OF THE SURVEYOR GENERAL. REPORT OF EDGAR BRAY, *D.L.S.*

SURVEY OF OUTLINES IN PEACE RIVER DISTRICT.

E. DEVILLE, Esq., LL.D.,
Surveyor General,
Ottawa.

Sir,—I have the honour, in accordance with my instructions, to submit the following report on the survey of that part of the 5th meridian which lies in township number 72, and also on the survey of the 19th base line, from ranges 1 to 14, both inclusive, west of the 5th meridian.

I left home on April 20, 1904, and arrived at Edmonton on the 29th, having remained in Winnipeg four days, hunting men and procuring camp outfit. At Edmon-

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ton I had some difficulty in finding suitable horses at reasonable prices, but after a few days hunt I was offered a lot of fifteen fair animals which I purchased.

Supplies, &c., were then bought and the men engaged and on May 13, we left Edmonton and arrived at Athabaska Landing on the 17th of that month. Here the provisions were transferred to a boat for transportation up the Athabaska and the camp outfit, &c., packed on the horses and sent across the country to the mouth of Lesser Slave river, where everything arrived on May 28.

From this point we cut a pack trail to the 5th meridian and thence north to a suitable camp ground about 75 chains north of the southeast corner of township 72, range 1, but owing to some very bad swamps we did not get all our outfit moved until June 2.

Cloudy weather prevented an observation until June 6, therefore on that day I commenced the survey of the 5th meridian, and thereafter the survey was continued as steadily as the weather and other circumstances permitted.

Twice, during the survey, a considerable interval elapsed between astronomical observations, the first being in July and the second in September, caused in the first instance by dense smoke, and in the second by almost continuous clouds and frequent rains, which also retarded the progress of the work.

On Saturday, June 25, John Bower, a member of my party, while bathing and practically alone got into deep water and was drowned. His body was recovered and buried, and his relatives informed of the accident.

On June 30, while moving camp, a bush fire destroyed what had been left behind for a second trip, consisting mostly of clothing belonging to myself and members of my party, with some smaller instruments and (excepting the field notes) the records of the survey up to that date. An investigation showed that the fire did not start from any of our camp fires, but apparently had its origin some distance to the southeast.

As this fire burned some of the tables for determining the azimuth of the line, by time observations, I was obliged, thereafter, to take these observations at either elongation of Polaris; especially because, soon after the fire, the main spring of my sidereal watch was found broken.

In October I closed the survey in time to go down the lake and rivers by the last possible boat. This plan was adopted because my provisions were nearly used up. No adequate supply could be got at the lake, and there was no chance of getting more until the rivers were frozen and passable for teams which might be late in December. My transit, also required repairs, on account of its having been roughly handled by a bear, during our temporary absence from the line.

(NOTE.—Description of the townships surveyed have been taken from this report and published as part of Appendix No. 29).

Good water was always easily found within the country covered by the survey.

The Moose, Assineau, Swan and Driftpile rivers are fine streams, but as their value for water power is limited to their lowest water, their importance for that purpose is very small. On the other hand Lesser Slave river always has a considerable flow of water, but only in the lower part, near the Athabaska, can banks be found sufficiently high to allow for the erection of dams.

Some differences of opinion exist regarding the climate and the agricultural possibilities of this region, and respecting that matter I may mention that our last frost in spring was about June 20, and the next thereafter was on August 28, an interval of about ten weeks. I have had some experience in the North-west and have noticed some summers where the interval between frosts was very much shorter than the above, and that in districts where farming is now carried on with success; a result due, no doubt, to cultivation of the soil and drainage. I think I can safely say that there is no material difference between the climate at Lesser Slave lake and that of the Saskatchewan.

Small quantities of coal were noticed in the larger streams running into Lesser Slave lake, which shows that coal may be found up stream, probably in Swan hills.

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Waterfowl and other game birds were not plentiful, but indications of moose, deer and bears were so often noticed that I believe these animals are very numerous, especially south of Lesser Slave lake.

I have the honour to be, sir,

Your obedient servant,

EDGAR BRAY, *D.L.S.*, 1904.

APPENDIX No. 14 TO THE REPORT OF THE SURVEYOR GENERAL.
REPORT OF J. D. CRAIG, *D.L.S.*

INSPECTION OF CONTRACT SURVEYS IN EASTERN ASSINIBOIA AND SASKATCHEWAN AND IN
MANITOBA.

OTTAWA, March 17, 1905.

E. DEVILLE, Esq., LL.D.,
Surveyor General,
Ottawa.

SIR,—I have the honour to submit the following general report on examination of contract surveys in the eastern portions of Saskatchewan and Assiniboia and in Manitoba during last season, under instructions from you dated March 18, 1904.

After having collected the necessary information with reference to the contracts, I left Ottawa on April 26 and arrived at Regina on the 29th. Here I found that there were no trains for the north, there being washouts at several points on the railway between Regina and Prince Albert. The town was full of settlers and others waiting to get north, and there were many cars of stock and settlers' effects in the freight yards. I was detained here until May 7, three days of this being spent in quarantine, as small-pox had broken out at the hotel where I was staying. I reached Prince Albert on May 9, after a forty-two hour trip, most of the time in a crowded freight car. The Qu'Appelle river was crossed at Lumsden on small scows and the Saskatchewan at Saskatoon in a small steam ferry.

After outfitting at Prince Albert, I was forced to wait until May 24 for my baggage, which did not arrive till that date. I left on the 25th for contract No. 15 of 1904, and camped in the contract that night. After examining this contract, I went to contract No. 14.

On reaching Prince Albert on June 17, after having finished this contract, I received your instructions to proceed to Redberry lake to contracts Nos. 10 and 11 of 1903. After restocking with provisions, I left Prince Albert the next day and arrived at the lake on the 21st. We experienced a rather severe hailstorm that evening, which badly damaged two tents. I spent about three weeks in these two contracts; then went east to contract No. 13, near Fort a la Corne, spending one day in Prince Albert buying provisions and having the horses shod.

Reaching la Corne on July 16, I learned that Mr. Reilly had left his work, after having completed only two townships. These were examined, and I left for contract No. 11, being forced to go round by Melfort, and east and north from there, as there was no direct trail from la Corne. After examining this contract, I proceeded to Contract No. 10 via Melfort and then spent three days, August 15, 16 and 17, with Mr. Lemoine in contract No. 9, north of the Quill lakes. While the wagons and outfit were moving eastward from here towards Fishing lake, I made a trip by buckboard to Nut lake to try to ascertain in what township Mr. Cavana (contract No. 8) was working. I was unable to do this, and went next to contract No. 55, near Touchwood. From there I went north through Contracts Nos. 7 and 6 to No. 59 north of Swan

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river, then south, over the western shoulder of Duck mountain, through contracts Nos. 5 and 54 to No. 58, thence northeast to Nos. 4 and 64 east of Dauphin lake.

The horses were, by this time, very much fagged by so much moving, and by the poor feed available, and I was forced to stay at Makinak three days, November 11, 12 and 13, to rest them. Then I went southwest over Riding mountain to the addition to contract No. 26.

From here I proceeded by rail with the outfit 250 miles to contract No. 3, southeast of Winnipeg, reaching there on December 3. After examining this contract the outfit was shipped back by rail to Solsgirth for a supplementary examination of contract No. 26, as per your instructions. This was finished on December 31, and after arranging for wintering the horses and storing the outfit, I left for Ottawa on January 4 and reached there on the 8th.

The season was, on the whole, a good one for field operations, very little bad weather being experienced. The main trails travelled over were, as a rule, good, but when off the main trails, the travelling was very rough, and very hard on horses and outfit. One horse became so weak that he had to be left at Carlton on July 12, and he has since been sold.

The distance travelled by the outfit as a whole was 1,735 miles. In addition to this there were 600 miles covered by various side trips and 500 miles by rail. In all some eighteen contracts were examined. Nos. 8 and 9 had not enough work done in them when I was in that district to make an examination of any value, and they were left, as at that time, I expected to be able to return later in the season. This, however, was found to be impracticable.

I have the honour to be, sir,

Your obedient servant,

(Sgd.)

J. D. CRAIG.

APPENDIX No. 15. TO THE REPORT OF THE SURVEYOR GENERAL.
REPORT OF J. J. DALTON, D.T.S.

SURVEYS IN ASSINIBOIA AND ALBERTA.

WESTON, April 5, 1905.

E. DEVILLE, Esq., LL.D.,
Surveyor General,
Ottawa.

SIR,—I have the honour to submit my report of surveys made by me last year in Assiniboia and Alberta, under your instructions of April 8, May 26, June 27, &c., 1904.

I left Milton on April 13 and arrived at Calgary on Sunday, 17. The following two weeks were occupied in collecting transport and preparing for the surveys. I engaged a car at Calgary and transferred all my horses, outfit and party to Brooks arriving there after much delay on May 4 when I immediately assembled the wagons and prepared generally for a start on the following morning and arrived at township 22, range 9, west of the 4th meridian on the 7th and on the 9th, I commenced the inspection of this township by running the north boundary of section 19 and other lines again from this one finding it necessary to re-survey the whole township upon which I have already reported to you.

On June 13 I arrived at Calgary by train, purchased supplies, engaged new men and returned meeting my party at Bassano on the 15th. I proceeded to township 27, range 17, west of the 4th meridian arriving early on the 17th.

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I commenced the survey of township 27, ranges 17 and 18 by running their south boundaries and then running the meridians to Red Deer river.

The character of the country in township 27, is very similar to that of the first mentioned township all being crossed by Red Deer river but the ravines are much longer in township 27 and become veritable canyons as they approach the banks of the Red Deer being formed of cut banks from 300 feet to 400 feet high over which it is impossible to cross and which had to be triangulated in order to carry the lines over them.

The three foregoing townships are best adapted for ranching and are apparently fully occupied by men of that craft who have it all or nearly all fenced. Some of the upper lands are cultivable but are rather too broken to raise cereals in sufficiently large quantities. The soil generally is sandy loam with clay subsoil; on the hill sides and much of the river valley it is barren and bare. There is very little scrub or timber and it occurs only as a margin on the river banks, and in some of the ravines. Coal is found in township 27, range 17.

On July 8 I started on my return journey to Calgary and arrived on the 13th without incident and camped on the Elbow, township 23, range 1, west of the 5th meridian. I proceeded to traverse this river (at this camp) I was much delayed by sickness among my horses on which you have received my report).

On July 25, I commenced the survey of Sheep river in township 20, range 2, west of the 5th meridian which with the survey in township 20, range 3, detained me until August 18.

There are 15 settlers in the last mentioned township, 9 of whom made their declaration, one deliberately refused and others though notified of the opportunity were at least indifferent about it.

There is evidently one good coal seam on section 2 of this township which had been worked for several years but is now in disuse. The soil generally is 6 inches black loam with clay subsoil on the ordinary level, on the hills which range to 400 feet the soil is lighter and rock protrudes, but the pasture is luxuriant and the country is excellent for ranching but too hilly and broken for farming on a large scale. The township is drained by Sheep river and some of its small tributaries.

Township 19, range 3, west of the 5th meridian has two new squatters on sections 12 and 11. I located these by running the north boundaries of their sections from the northeast corner of section 12 and then the meridional boundaries. Tongue creek runs through these sections and Lineham post office is on section 35. This township is hilly but excellent for ranching, hay and natural shelter being abundant.

Township 13, range 3, west of 5th meridian. As the south boundary of this township had not been run, I ran a section line to it and then I ran it before proceeding with the survey. This chord was chained twice owing to a mistake in the outline survey of one chain. This township is a favourite ranching district and is nearly all taken by ranchers on account of the immense growth of grass on both high and low land. The soil is deep black and sandy loam and subsoil from sandy to clay. Spring water is abundant. Timber is found in small quantities along Highwood river both poplar and spruce 20 inches in diameter. Two fine varieties of trout are abundant in all the streams.

Township 16, range 1, west of 5th meridian. I finished the survey of this township which is traversed by two branches of Mosquito creek which run through sections 2, 3, 10, 14, 15, 16 and 17. The north part of this township is well watered with springs which unite into creeks. There is no timber and very little brush; grass is luxuriant and in favourable seasons is cut over the tops of the hills which are about 400 feet high. The soil is generally good black loam with sandy subsoil. The township is nearly all ranched.

Township 17, range 2, west of 5th meridian. I retraced the boundaries of sections 3 and 4 which are nearly all hay land and are traversed by Stimson creek, a stream 20 links wide.

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Township 15, range 2, west of 5th meridian. In this township I ran the east boundaries of sections 29, 20, half of 17 and 36, range 3, all of which is well suited to ranching having plenty of hay land and natural shelter. The soil is deep loam.

Township 9, range 2, west of 5th meridian. I completed the survey of this township by running the east boundary of section 31 and the north boundaries of 31 and 32 which were over hills 600 or 700 feet above the bed of Todd creek.

Township 8, range 2, west of 5th meridian, though very hilly is an excellent township for ranching having abundance of grass and natural shelter.

Township 6, range 2, west of 5th meridian. I ran the east boundary of section 30 and the north boundary of section 20, which are rather mountainous though excellent ranching land with good grass and shelter. Wheat and potatoes are successfully grown here. There is coal on section 29.

Township 6, range 3, west of 5th meridian is altogether mountainous and is very much covered with small timber, jackpine and poplar just recently burnt. The land is not arable more than in small patches. I surveyed sections 17, 20, 21, 22, 27 and 28 which was all that could practically be done from any camp along the South Fork river. To move my camp to the north of the township in order to complete the work there would require two or more days to go around by the Pincher creek trail. I was loath to do this knowing that the country was all burnt and would likely fail for want of pasture.

In travelling south from township 15 I followed the settlers trail to Willow creek and from this point I sent a mounted man down into township 14, range 1 who returned stating that he had gone 5 miles down the river and had found no new settlers and that the road was impassable for the outfit, (later in the season this proved to be incorrect). Proceeding south I arrived at Westrup creek and also at the end of the wagon trail. Contrary to the advice of settlers I continued my journey south between the Porcupine hills and the mountains but found it very difficult though practical for a strong outfit. Sometimes I had to put three teams to a wagon in order to climb some of the hills. After crossing township 12, the road was comparatively easy to the several points south. On leaving township 6, range 3, I proceeded to Pincher Creek with the intention of completing the surveys to the south of that place but on my arrival there I received notice of surveys required to the north and upon which I have already reported to you. I then proceeded to Calgary and placed my outfit for the winter about two miles west of Midnapore, dismissed my party and departed, arriving at Weston on November 23.

I have the honour to be, sir,

Your obedient servant,

(Sgd.) JOHN J. DALTON, D.T.S.

APPENDIX No. 16 TO THE REPORT OF THE SURVEYOR GENERAL.
REPORT OF L. E. FONTAINE, D.L.S.

OUTLINE SURVEYS IN NORTHERN ALBERTA.

LEVIS, February 15, 1905.

E. DEVILLE, Esq., LL.D.,
Surveyor General,
Ottawa.

SIR,—I have the honour to submit the following general report on block outline surveys executed by me in Alberta district during the past season, in conformity with your instructions dated March 18, together with subsequent instructions of May 20, June 6 and August 19.

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On receipt of your instructions and after attending to a few preliminary preparations, I reported at your office to obtain the necessary forms and data in connection with the work, and then left for Edmonton, where I was to organize my party.

On April 12, while in Calgary waiting for a train to proceed northwards, your telegram addressed to Mr. A. O. Wheeler, containing your order that I was to take charge of the horses and outfit used during the previous season, was handed to me. I then proceeded to the Rio Alto ranch on High river, where the horses had been wintered, and the outfit stored. Owing to the short notice and the roads being wet and heavy, it was impossible to undertake an overland trip to Edmonton. I therefore sent the outfit by rail, and it arrived in Edmonton on April 19.

The next few days were employed in ordering supplies, hiring men and taking steps to have four months' supplies freighted to a depot that I had decided to establish at the junction of the Macleod and Athabaska rivers; also the purchasing of horses to make up the number allotted and to replace those which were discarded on account of being too heavy and therefore not suitable as packers.

My organization was completed on April 28, but from then until May 3, owing to the prevalent rains, I was obliged to postpone my departure. On the last named date, conditions being favourable, I left Edmonton by way of St. Albert and Riviere Qui Barre and from there proceeded to the Pembina river, crossing by the Chalmers trail. The recent heavy rains had rendered the roads so soft that wagons would get mired, and in consequence we were obliged to double the teams on a load. The floods had in places damaged the culverts and bridges, necessitating temporary repairs to enable us to continue our journey. With these difficulties to contend with, progress was slow, and I was delayed somewhat in reaching the crossing.

On my arrival at the crossing, finding the water of the river of sufficient depth, I decided to use the river to transport the supplies and men, sending the horses by overland trail. Accordingly I built four strong rafts, and on May 12, I left for the sixteenth base line, at the 5th meridian, landing three days later, within two hundred yards of the said point.

At the starting point, on account of the cloudy weather and the smoky atmosphere, several days elapsed before I could take proper observations to carry on the survey. Then the operations had only been carried on a distance of one mile and three-quarters where the base line intersected an open muskeg of two and one-half miles in extent and surrounded by a tamarac swamp of one-half mile in width and flooded with one foot of water. The passing of this obstacle had to be done by running a right angled offset, which, of course meant additional work and impaired progress—eventually this being accomplished, the opening of the base-line was successfully carried on, and considering the heavy timber, good progress was made every working day; and on July 20 I intersected the east bank of Athabaska river, at which point I was to close the survey of this line.

My next work consisted in running the 15th base line across ranges 5, 6, 7 and 8, and in doing this no serious difficulties were encountered, and were it not for a few days delay at the start, owing to the inclemency of the weather, the work would have been accomplished in a remarkably short time.

The next clause in your instructions called for the opening of the 13th base line across ranges 6, 7 and 8. I may state that during this work, progress was greatly delayed owing to the scarcity of water, obliging us to have camp a considerable distance from the work, and in consequence entailing a loss of time in going to and from. Nevertheless, the whole was eventually carried out.

I next gave my attention to the 14th base line, and proceeded as follows:—

1. I checked by observation the bearing of the line in range 6 and found it to be $270^{\circ}.159$.

2. I went to range 7, repeated the operation and found for the bearing of the chord $270^{\circ}.196$.

3. I retraced and chained the portion of the base line in range 7 run by Mr. G. P. Roy, D.L.S., during the present summer.

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The line opened by Mr. Roy is a true prolongation of the portion of the township chord previously established, the chainage is satisfactory and the posts and monuments conform in all respects to the Manual of Surveys.

My next operation was to produce westerly the base line across ranges 8, 9, 10, 11 and 12. In ranges 8 and 9 I made a deflection south of west of ten minutes, that is to say, that in these two ranges the township chords are $269^{\circ} 50'$ instead of being theoretic. This was done so as to offset the deviation found in ranges 6 and 7, as explained above, and thereby place the line nearly in its proper latitude. In ranges 10, 11 and 12 the base line is theoretic.

On the completion of these operations I left for Edmonton where I discharged the party. A few days were devoted to settling survey accounts and making arrangements for the storing of the outfit, after which I left for home where I arrived on December 12.

Having given a brief account of the operations carried on during the season I will now give a description of the territory covered.

(NOTE.—Descriptions of the townships surveyed have been taken from this report and published as part of Appendix No. 29).

Concluding, I may say, that in order to carry out my instructions I had occasion to cross in a southerly direction the area included between the 16th and 13th base lines, and out of it in my estimation the zone comprising townships 54 to 58 inclusive and from range 6, westerly to range 11 would be well adapted for settlement.

Before closing this report I must say that my assistant, Mr. J. E. Umbach was most willing and that he performed his share of the work with ability.

I have the honour to be, sir,

Your obedient servant,

(Sgd.) LOUIS E. FONTAINE.

APPENDIX No. 17 TO THE REPORT OF THE SURVEYOR GENERAL. REPORT OF ERNEST W. HUBBELL, D.L.S.

RE-SURVEYS IN NORTHERN ALBERTA.

OTTAWA, December 30, 1904.

E. DEVILLE, ESQ., LL.D.,
Surveyor General,
Ottawa.

SIR,—I have the honour to submit the following general report of my survey operations during the past season in northern Alberta, made under your instructions, dated March 18, 1904.

Leaving Ottawa on April 7, I reached Edmonton on Saturday the 16th, being delayed about two days en route by wash-outs on the Canadian Pacific Railway. On Monday the 18th, I had my survey outfit overhauled, horses shod, &c., and left the following day for Leduc (20 miles), where I arrived on the 20th. The next day was spent in making general repairs to outfit, completing the organization of my party, loading supplies, &c.

On the 22nd I left Leduc with my outfit, but owing to the almost impassable condition of the trails, it was necessary to hire an extra team of horses to assist with the transport, it being impossible to haul anything like an ordinary load with one team through such deep mud.

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I arrived at section 2, township 50, range 27, west of the fourth meridian, the initial point of my survey, on Saturday the 23rd, and commenced the resurvey of this township on Monday by running the east boundary of section 2.

I completed the renewal and re-establishment of the survey monuments in this township as far north as the Saskatchewan river and by May 7, most of the portion which is under cultivation; the remainder is covered with poplar, willow and some spruce of fair size, more especially in the deep ravines which run into the river. Many of the survey monuments were obliterated, some entirely lost. In order to find the original corners, it was necessary to reopen all the old survey lines and chain them accurately—work equal to an original survey.

I also renewed the monuments on the north boundary of township 49, range 27, and next proceeded with the resurvey of township 50, range 28, west of the fourth meridian, and townships 50, ranges 1 and 2, west of the fifth meridian.

Not one iron bar was found in any of these townships, nor even at the township corners on the fifth meridian.

These townships are nearly all covered with a thick growth of heavy poplar, spruce and tamarac and great areas of windfall. The surface is broken by the deep ravines of Weed creek and Strawberry creek, the banks being in places three hundred feet in height and most precipitous. These streams average about fifty links in width, are from two to four feet in depth and have a good current, which at high water is sufficient to convey logs to the Saskatchewan river. Not the least difficult part of our work was the cutting of trails in order to move camp, and the climbing over immense windfalls and wading through deep muskegs to and from work every day was most fatiguing and laborious. Whilst in this vicinity, one of my best horses accidentally ran a piece of rotten wood into his chest, where it remained, we being at the time oblivious of the fact. We did all we could for the wound under the circumstances, but he failed daily. Five weeks afterwards we led him a 70 mile trip to Edmonton, where the veterinary surgeon extracted a piece of wood $1\frac{1}{2}$ inches in diameter and nine inches long from his chest. I am glad to say the horse recovered after the operation and rapidly gained in weight and strength.

At the northeast corner of section 23, township 50, range 28, I found a difference of ten chains in the position of the river, as compared with the plan of the original survey. This I rectified by making a mound at 80 chains after resurveying township 50, range 2, west of the 5th meridian. I decided that it would be waste of time to resurvey further west for the present, more especially as there are no settlers in that vicinity, nor likely to be for a number of years, the townships being entirely covered with thick heavy timber and having no means of access. I concluded that it would be better to cross the Saskatchewan river and complete as much work as possible on the north side and also resurvey township 51, range 1, as instructed in your letter of the June 17. Not finding a ford, I was compelled to cross the river at Edmonton, which necessitated a detour of eighty miles or more.

We reached Stony Plain on July 15, commenced work the following day in township 52, range 27, west of the fourth meridian and completed the resurvey by the 30th instant with the exception of a few corners in the southeast corner, which were unapproachable owing to deep muskegs. This is one of the finest townships in the Edmonton district, and is nearly all under cultivation. The immense beautiful fields of waving grain give the passing traveller or emigrant but a faint idea of the vast resources of this fertile country. They reflect much credit on the settlers, who are chiefly Germans in this district.

I then resurveyed fractional townships 51 and 52, range 28, west of the fourth meridian, in which nearly every corner was obliterated or lost. I next resurveyed township 51, range 1, west of the fifth meridian, which required reposting very badly; one corner out of every five was obliterated or lost. It is fairly well settled, but about seventy-five per cent is covered with timber, principally of an inferior quality. I then completed the resurvey of township 50, range 28, west of the fourth meridian and

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township 50, range 1, west of the fifth meridian, which lie to the north of the Saskatchewan river, and on September 1, moved camp to township 51, range 27, and commenced the resurvey of the same.

This township is about one-third muskeg, two-thirds of the remainder being covered with poplar, tamarac and willow. Settlers of German origin occupy all the available land.

The system of drainage which is being gradually adopted by many settlers in the west, might be applied with advantage in this township.

From here, I moved camp to township 55, range 27, west of the fourth meridian, and completed the resurvey of the same by October 15. I then resurveyed townships 56 and 57, range 27, west of the fourth meridian, the latter being mostly covered with large timber, poplar, willow and spruce.

Owing to an accident which I received whilst riding, I was reluctantly compelled to close my field work earlier than I anticipated. After storing my outfit and sending my horse into winter quarters, I returned to Ottawa.

GENERAL REMARKS.

Settlers are continually going into this very fertile district, and as the greater portion of the open country is settled upon, they are gradually pushing into the more wooded country.

CROPS.

The crops this year on the whole correspond very favourably with other years. Oats averaged fifty to sixty bushels to the acre and wheat about thirty. The vegetables, as they have always been, are the finest in the North-west Territories. All sorts of wild berries are most abundant.

.. GAME.

Bears, wolves, foxes and muskrat are quite numerous, as are also prairie chicken, partridge, geese, ducks and the sand-hill crane.

CLIMATE.

Taken as a whole, the season was most favourable for vegetation and harvesting and for surveying operations in the field, the month of November being a summer month with sunshine, no snow and but little ice.

I have the honour to be, sir,

Your obedient servant,

E. W. HUBBELL, *D. L. S.*

APPENDIX No. 18 TO THE REPORT OF THE SURVEYOR GENERAL.
REPORT OF ALFRED W. JOHNSON, D. L. S.

SURVEYS IN NEW WESTMINSTER DISTRICT, B.C.

KAMLOOPS, B.C., 1905.

F. DEVILLE, Esq., LL.D.,
Surveyor General,
Ottawa.

SIR,—Before getting my party together I spent three days finishing up some work on the approach to the south end of the New Westminster railway bridge, and on Musqwan Indian reserve. On April 13 I went up to Chilliwak with a small party and began work a couple of days later on Chilliwak river in lot 439. The north boundary of this lot was in doubt, and it was not until several false starts had been made that we found one of the original posts, very rotten, but with bearing trees standing, and it was then a comparatively simple matter to retrace the lines.

On May 5 we moved to Harrison river, thence to Harrison Hot Springs on the 6th.

In my triangulation up the east side of Harrison lake in 1903 I had found a considerable difference between my work and that of the previous survey. My instructions were to run a triangulation up the west side of the lake as a check. So I measured a base at the south end of the lake as carefully as possible with what instruments I had, chaining over levelled stakes at 50 link intervals, on a wet day, and comparing with the standard tape. Stones with lead bolts let into them were sunk at each end of the base. In the triangulation all angles were read right round the circle, left and right, three angles in each triangle, and adjusted. The closing base was at the mouth of Silver creek, measured in 1903. This year's length of that base by triangulation differed from the actual measurement by about three tenths of a link, and confirmed my last year's report.

Following instructions I destroyed all the posts of the previous survey and put new ones in at the correct corners. I then established the north limit of the railway belt on the west side of the lake. Unfortunately before quite finishing the work there I cut my foot rather badly with an axe, and though the actual time lost while away getting it sewed up only amounted to a couple of days, the work was necessarily kept back somewhat during the next three or four weeks, as I had to confine myself to traversing on the water's edge and similar places, where crutches could be used.

Toward the end of July, after marking out the belt limit on the east side of the lake and connecting our work at the mouth of Silver creek with the mineral claims there, we began a series of lines up the creek, checked by a traverse, to get at the railway belt in townships 8 and 9, range 29, west of the 6th meridian. On July 29, I was summoned to Kamloops on a purely private affair, and after a couple of days packing in my absence, work ceased, and everything was run at my expense, until August 7, when I got back.

We got at the railway belt again on the east boundary of section 6, township 8, and followed it to the northeast corner of section 29. The last mile rose 3,700 feet from one corner to the other and as the belt limit then led over extremely precipitous country at the foot of the ice on Mount Douglas, I decided to continue the traverse of Silver creek and work up to the belt limit again at a more accessible point.

We had been packing for a month and were now too far from the nearest point to which canoes could be brought to make it worth while to pack in fresh supplies. So.

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taking large packs, we left tents and clothes behind and kept the traverse going while food lasted.

Though I did not consider that there was time to reach the belt by means of a double traverse, every care was taken over the single one, the chaining being done twice by different men.

We touched the limit on the north boundary of section 16, township 9, range 29, west of 6th meridian and again on the east boundaries of sections 19 and 30, in the same township and range.

This was at the foot of a glacier on the north slope of Mount Douglas, an exceedingly rough piece of country.

As sickness and hardship had turned two men back, a couple of weeks before, and the rainy weather was beginning, I put witness posts in and went back to the mouth of Silver creek.

The timber up this creek will not bear comparison with that in the Chehalis valley, but the whole of what there is, is in the railway belt. The district has not been very actively prospected and the only mine being seriously exploited is on Fire mountain in provincial land. Except for a little bench land on the west side of the creek between Clear creek and the mouth and perhaps half a square mile right at the mouth there is no land fit for agriculture. Lower down the lake at 'Twenty Mile' point there is about a square mile altogether of fair land. After leaving this district we ran a traverse and put in two witness posts in sections 18 and 19, township 5, range 28, west of the 6th meridian, near Rainbow falls and three more witness posts on the south shore of Harrison river in sections 15 and 14, township 4, range 29, west of the 6th meridian.

On October 20, we moved to North Bend and next day camped on Boston Bar.

I began by retracing the north boundary of section 34, township 10, range 26, west of the 6th meridian and producing it across Fraser river. Running south I tied onto lots 1 A, and 30, group 1, and 8 lots, comprising the old townsite of Boston Bar. Section lines were run through these lots and produced as far as Shrypt-ta-hook Indian reserve. In township 11 a few lines were run and posts put in at the intersection of the Canadian Pacific Railway right of way and the legal subdivision lines.

On November 11 I paid off all but two of the men, who were retained to help me in the townsite of Boston Bar, a full party not being necessary. These were paid off on the 18th and I got into Kamloops the same night.

There is some bench land on the west side of the Fraser in sections 34 and 27, township 10, and in sections 11 and 12, township 11, but in general the mountain rises very steeply almost from the railway.

The season of 1904 has been exceptionally fine on this coast, and we did not lose four whole days on account of rain, which is a most unusual thing.

I have the honour to be, sir,

Your obedient servant,

ALFRED W. JOHNSON, *D.L.S.*

APPENDIX No. 19 TO THE REPORT OF THE SURVEYOR GENERAL.
REPORT OF G. J. LONERGAN, D.L.S.,

RESURVEYS IN EDMONTON DISTRICT.

BUCKINGHAM, QUE., April 10, 1905.

E. DEVILLE, ESQ., LL.D.,
Surveyor General,
Ottawa.

SIR,—I beg to submit the following general report on resurveys made during the past season in the Edmonton district.

I left Ottawa on April 12, and arrived at Edmonton on April 18, here I had my outfit to meet me by previous arrangement. I made inquiries about the trail from Strathcona to Millet and was strongly advised not to attempt it with loaded teams, as the frost was coming out of the ground and it would be three days hard work. The difference of the freight rates on the provisions only and that for a car where I could load the entire outfit was so little that I decided on that latter. The morning of April 20, I left Strathcona and arrived at Millet in the township where my first work was to begin. The same afternoon I looked up old corners and the following morning commenced operations.

(NOTE.—Descriptions of the townships surveyed have been taken from this report and published as part of Appendix No. 29).

After completing the surveys I returned to Wetaskiwin, where I paid off most of my men. I then drove my outfit to Edmonton, where I stored it for the winter. I was preparing to return east when I received your message to go to Banff, to do some surveying for the superintendent of the Rocky Mountain National park. This I did and then returned home, arriving after an absence of eight months and one day.

I have the honour to be, sir,

Your obedient servant,

G. J. LONERGAN, D.L.S.

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APPENDIX No. 20 TO THE REPORT OF THE SURVEYOR GENERAL.
REPORT OF J. K. McLEAN, D. L. S.,

OUTLINE SURVEYS IN NORTHERN ALBERTA.

OTTAWA, October 17, 1904.

E. DEVILLE, Esq., LL.D.,
Surveyor General,
Ottawa.

SIR,—I have the honour to report as follows on my survey of township outlines in northern Alberta, west of the fourth meridian, during this season.

(NOTE.—Descriptions of the townships surveyed have been taken from this report and published as part of Appendix No. 29).

As a whole none of these townships are of much value for agricultural purposes. However, where they are partially open there is a fine growth of summer feed.

There are a few settlers in the valley of the Towntinow along the Athabaska Landing trail. They keep stopping places for travellers and freighters, but have difficulty in getting hay, having to hunt the country and haul it long distances; the amount of good land in the valley is small and consists of occasional flats along the river. These settlers grow good potatoes and garden stuff. At Sandy creek in township 63, range 23, I saw a field of about 10 acres of as fine oats as could be seen in the neighbourhood of Edmonton, but no large farm could be made there. There are also some settlers in the south part of township 66, range 22, but the small areas of crops they had looked very poor owing perhaps to the dry season and late sowing. None of the stuff growing, grain or garden stuff, looked nearly as well on the high ground or top of the valley as that growing in the valleys.

At Athabaska Landing as fine a garden could be seen as anywhere in the west.

I saw a settler from Baptiste lake, about 15 miles west of Athabaska Landing, who told me he had squatted there and had 120 acres broken, 60 being under crop; that up to this season he had good crops of oats but had not tried wheat. The oats he disposed of at high prices to freighters going to Lesser Slave lake and Peace river. He stated that there were no large areas such as he was on, the country generally being covered with timber or scrub and badly broken by large muskegs.

I have the honour to be, sir,

Your obedient servant,

J. K. McLEAN, D.L.S.

APPENDIX No. 21 TO THE REPORT OF THE SURVEYOR GENERAL.
REPORT OF E. H. PHILLIPS, D.L.S.

INSPECTION OF CONTRACT SURVEYS WEST OF SOUTH SASKATCHEWAN RIVER.

OTTAWA, December 17, 1904.

E. DEVILLE, Esq., LL.D.,
Surveyor General,
Ottawa.

SIR,—I have the honour to submit the following general report on my field operations in connection with the inspection of contract surveys made west of the south Saskatchewan river during the season of 1904.

I received instructions for this work on March 18, 1904, and at once began to collect information in respect to the contracts in my district. This occupied my time until April 16, on which day I left Ottawa for Saskatoon.

On reaching Regina I learned that a washout had occurred at Lumsden on the Prince Albert branch of the Canadian Pacific Railway, where the roadbed for a distance of five miles was flooded and partly washed away. Information as to the probable length of the delay was difficult to obtain, the general impression being that the water would subside and that the road would be ready for traffic in a few days. Owing to numerous heavy rains at the time the whole country was under water, and towns north of the washout were beginning to run short of provisions. Immigrants and settlers were arriving in such numbers that the town could not accommodate them, many sleeping in tents, the railway station and even in stables. To make matters worse small-pox broke out in the town, and the hotel at which I had secured accommodation was placed under quarantine. In the meantime the railway authorities had established a ferry at Lumsden, and on May 7, after being vaccinated and all my effects fumigated I was able to proceed to Saskatoon, where I arrived after 36 hours travel in a crowded freight car. At this place the railway bridge across the south Saskatchewan had been destroyed by the ice and everything had to be ferried across the river in boats.

I immediately started to outfit, and went into camp next day, as soon as my tents, which luckily I managed to have shipped on the same train, were brought across the river. Part of my baggage, however, did not reach me till June 7.

My first work was to retrace the lines in contract No. 7 of 1903 and for this purpose I left Saskatoon on May 18. I proceeded by trail to Dundurn, where owing to the bad state of the roads, I left part of my outfit and sent back for it later. I reached township 32, range 28, west of the second meridian without incident two days later and began work. In this district I retraced the lines in township 31, ranges 26, 27 and 28, west of the second meridian and township 32, ranges 27 and 28 and the lines in that part of township 32, range 26 lying south of Little Manito lake.

The season being well advanced and having received telegraphic orders to proceed with the work of inspection of the 1904 contracts, I left this district on July 9 and reached Saskatoon on the 12th. I spent the next day overhauling my outfit, making repairs and purchasing supplies and left town on July 14.

According to instructions I proceeded to contract No. 23, a distance of about 120 miles southwest from Saskatoon, remaining, however, for several days in contracts 21 and 22, in order to allow my horses to rest after the hard trip over a hilly country with no trail. During this time I examined the surveys in township 34, ranges 20, 21, 22 and 23 and township 33, range 23, west of the third meridian, travelling by easy stages to

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contract No. 23. Many severe thunder storms accompanied by hail occurred about this time, one of which almost completely destroyed my tents.

I examined the survey of 40 miles of section line in contract No. 23 and proceeded with the examination of the survey of contracts 24, 25 and 26, in which I retraced 47, 39 and 37 miles of section line respectively. This occupied my time until August 29 when I proceeded to make a correction survey in township 40, range 24, west of the third meridian, according to your instructions of June 29. This work being in the direction of Battleford and as by going there I would have a good trail to contract No. 19, I proceeded to Battleford, which I reached on September 2. After a day spent in replenishing my supplies and outfit, I started south on the Swift Current trail and camped in township 34, range 16, west of the third meridian. In this district I examined the survey in the northern portions of contracts 18, 19 and 20. On September 17, a snowstorm came on and continued until the 19th about a foot of snow falling. I next moved southward along the Swift Current trail to township 30, range 17, west of the third meridian, reaching there on September 23. From there I made a trip westward into the southern portions of contracts 20, 21 and 22. About this time we had some very disagreeable weather with cold rain and snow flurries. On October 4 I started eastward and examined the survey in the southern portion of contract 18 and in contracts 16 and 17, which I finished on October 21.

I had received instructions to examine the survey in contract No. 63 which was situated south of Moosejaw, and also to make several correction surveys on my way there. I found that the ferry, which had been started at Hanly during the past season, was not running on account of a sand bar in the middle of the river, so I proceeded to Saskatoon in order to cross the river at that point. On my arrival there on October 24, I found that the ferry there had not been running for some time on account of sand bars, and preparations were being made to move it to another part of the river. This made it necessary that I should ship the outfit by rail to Moosejaw, and while it was en route I went to Craik and retraced the east boundary of section 6, township 25, range 27, west of the second meridian, according to instructions in your letter of September 15, 1904. A considerable error was found here in the original survey, but no change was made in the position of the monuments, as all the parties whose land was affected would not agree to the change. I then proceeded to Moosejaw arriving there on October 27. The next two weeks were spent in the examination of contract No. 63 about 25 miles south of Moosejaw.

On my return to Moosejaw several members of the party were paid off and I went to township 18, range 29, west of the second meridian to investigate a reported error in the old survey. An error had also been reported to exist in the south boundary of township 19, range 29, west of the second meridian. I found that the errors reported existed on the ground but being unable to obtain the consent of all the parties whose lands were affected thereby, I did not move any of the monuments, but simply retraced the lines as they were on the ground.

I arrived in Moosejaw again on November 13, and next day paid off the remainder of the party, with the exception of one man to look after the horses, and arranged for the storage of the outfit. The horses were sold on November 16 by public auction, and I started for home the same day and arrived at Ottawa on November 19.

During the season the survey of 12 contracts was examined, in which 413 miles of section lines were retraced. I also retraced 251 miles of section lines in contract No. 7 of 1903, and 12 miles of old survey lines making a total of 676 miles of section lines retraced. The number of pits measured in the examination of the 12 contracts was 3,016, the length of the sides and the depth in 4 places having been measured in each pit. In addition to these many witness trenches and stone mounds were also measured. Traverses to the extent of 6½ miles were examined and 136 astronomical observations were taken including duplicate check observations.

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The district comprising contracts 16 to 26, being a block of land composed of townships 27 to 34, ranges 10 to 29, west of the third meridian, together with a narrow strip extending northward in ranges 26 and 27 to Manito lake, can be generally described as rolling prairie. Fuel is very scarce throughout the whole district. It occurs in small quantities, however, in several places. In townships 34 and 35, range 16, west of the third meridian, is what is known as the '60-mile bush'; this is the greatest wood area in the whole district being possibly 20 square miles in extent. A little wood is obtainable in the ravines leading to Eagle creek, in township 34, ranges 19 and 20, west of the third meridian, also in township 31, ranges 11 and 12, and in the hills on the south side of Eaglehills creek in township 31, range 18, west of the third meridian. No other wood of any account was seen during the season.

Eaglehills creek flows in a wide valley which is in some places approached by very easy slopes; in ranges 17, 18, 19 and 20, west of the third meridian, however, the banks in some places are very precipitous, especially in the Tramping lake district where for 10 or 12 miles the valley becomes a deep canyon. The location line of the Grand Trunk Pacific Railway runs through this district, crossing the Saskatchewan river at or near Hanly; it runs in a westerly direction in townships 32 and 33 until it reaches the deep canyon referred to above which it enters and follows striking northward. It was again seen in township 38, range 27, west of the third meridian.

Fresh water is very scarce except in the sloughs which in some parts are very numerous. Nearly all the lakes and most of the streams including Eaglehills creek are alkaline and the water hardly fit for use, especially towards the end of the summer.

After the end of June very little rain fell and the summer and fall were exceptionally favourable to surveying operations.

In conclusion I wish to express my appreciation of the services rendered by Mr. J. E. Morrier who was appointed to my party and acted as assistant.

I have the honour to be, sir,

Your obedient servant,

E. H. PHILLIPS, *D.L.S.*

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APPENDIX No. 22 TO THE REPORT OF THE SURVEYOR GENERAL.
REPORT OF W. R. REILLY, D.L.S.

SURVEYS NEAR ATHABASKA LANDING IN NORTHERN ALBERTA.

SINTALUTA, ALTA., March 2, 1905.

E. DEVILLE, Esq., LL.D.,
Surveyor General,
Ottawa.

SIR,—I have the honour to report that acting according to instructions dated July 18, 1904, to take charge of Mr. J. K. McLean's party at Athabaska Landing, I performed the following surveys all west of the 4th meridian, under above instructions.

East boundary townships 65 and 66, range 24.

North boundary township 65, range 23.

East boundary township 66, range 22.

Subdivision of townships 65 and 66, range 22.

Re-survey of east boundary township 66, range 23, under instructions dated September 12, 1904.

I left Sintaluta July 30, Regina. July 31, arriving at Athabaska Landing in the evening of August 3, where Mr. McLean met me. I assumed charge of the party on the following day, August 4, settling accounts with Mr. McLean as before reported, and moving camp from west of the Landing to the southwest corner of township 65, range 22.

On August 5, I stored the wagons and moved by pack-train and camped on a small creek about one mile east of the southwest corner of township 65, range 23, from where I began work on the east boundary of township 65, range 24, finishing the survey with the subdivision of township 65, range 22.

(NOTE.—Descriptions of the townships surveyed have been taken from this report and published as part of Appendix No. 29).

Generally speaking, this survey did not cover a country that can be called suitable for settlement, however, small stretches where wood, hay and water are plentiful will make homes for settlers whose whole time is not devoted to farming, but variously employed, on the river, freighting, and other work in connection with the handling of furs and supplies for the north, Athabaska Landing being virtually the gateway for the trade of the country on the Mackenzie and Peace rivers.

I finished work in the field October 20. At Edmonton on the 24th I paid off the men, stored the outfit with McDougal and Secord, and let the horses out for wintering with Mr. Alexander McDonald. On the 25th I started for home, arriving here on the 26th.

I have the honour to be, sir,
Your obedient servant.

WM. R. REILLY.

APPENDIX No. 23 TO THE REPORT OF THE SURVEYOR GENERAL.
REPORT OF JOS. E. ROSS, D.L.S., 1904.

SURVEYS IN THE RAILWAY BELT IN BRITISH COLUMBIA.

KAMLOOPS, B.C., March 31, 1905.

E. DEVILLE, Esq., LL.D.,
Surveyor General,
Ottawa.

SIR,—I have the honour to submit my report on the surveys performed by me, in the Railway Belt, British Columbia, during the past season.

I began the season's operations by making several small surveys in the vicinity of Kamloops. From Kamloops I proceeded to the Nicola valley where I made a survey from a point near the mouth of Nicola river to the boundary of the railway belt. The Nicola valley trends in a southeasterly direction, scarcely ever exceeds half a mile in width and has high mountains on either side. Nicola river is about three chains wide and two to five feet deep and has a fall of about twenty feet in the mile. Most of the agricultural land had been taken up in Indian reserves and provincial lots. The remaining cultivable land lies in small flats along the river. The soil is a sandy and gravelly loam and requires to be irrigated to be productive. The freshets in the river, almost every year, do considerable damage to the low lying land along the banks. The lower part of the valley is mostly open, but the upper end and the mountain sides are pretty well wooded. Skuhun and Spiaos creeks which flow into the Nicola have narrow valleys with some agricultural land and merchantable timber. On the latter creek there are said to be some very good coal prospects. Both creeks could provide considerable water-power. The resources of these valleys will doubtless be fully utilized as soon as the railway now projected is built. The only engineering obstacles in the building of the railway will be the bridging of the river. There is a good wagon road on the north side of the Nicola. The stage makes weekly trips between Kamloops and Spence's Bridge. There are two highway bridges across the river, one at each end of the valley. The climate is good. The drawback is that even what little land there is fit for settling on, is so scattered that a good settlement can never be formed.

From the Nicola valley I went to Snuswap lake where I made a survey of some land required in connection with a mill site. After this I surveyed several sections near Moberly. Most of the land here is a swamp or muskeg. It is proposed to reclaim it by dyking and draining. It is conveniently situated to Moberly station and lies between the railway and Columbia river. Several settlers have located on the high land adjoining. On the east side of the railway the country is hilly and broken. The timber has been almost completely swept by fire. On finishing the survey here I laid out a small townsite at Field. The town site adjoins the grounds of the Canadian Pacific Railway Company and lies at the foot of Mount Stephen. The lay of the land does not permit of an extensive townsite, but there are probably more lots in the present survey than will be required for many years. The site had been already built on. There are two good hotel buildings and a number of small shops and cottages. The plan of survey which had been previously arranged was projected with the intention of interfering, as little as possible, with the present buildings.

From Field I went to Highland valley where I continued the survey of the previous year to the boundary of the railway belt. The valley is narrow with wild hay meadows along the creeks. The altitude being from 3,500 to 4,500 feet, it is only

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adapted for stock raising. The latter part of the meadows is included in Indian reserves. A few settlers could secure land here. The provincial government has just completed a road from Ashcroft into the valley. There are said to be several excellent mineral prospects here but sufficient development has not been done to prove that they are mines. I went to the Guichon creek valley where I continued the boundary of the belt easterly. At the same time I made a survey through the Meadow creek valley as far as Trout lake. This valley is similar to Highland valley. The wild hay land and grazing land make it suitable for stock raising. The best part has been already taken up in provincial lots. A few more settlers might be accommodated here.

I continued operations to the end of the year. The season was almost an ideal one for surveying work, but rather dry from a farmer's point of view. It seems most unfortunate that British Columbia with its fine climate and beautiful scenery should not have more agricultural land. If we only had the land I think there would be little difficulty in procuring settlers. As it is, I fear, quite a few settlers have taken up land where it will be difficult to make a fair living. Good land in the interior of the province, when well watered, sells in small lots at from fifty to two hundred dollars per acre.

I have the honour to be, sir,

Your obedient servant,

JOS. E. ROSS, *D.L.S.*

APPENDIX No. 24 TO THE REPORT OF THE SURVEYOR GENERAL.
REPORT OF ARTHUR SAINT CYR, D.L.S.

OUTLINE SURVEYS IN ATHABASKA.

LESSER SLAVE LAKE, ATHA., May 1, 1905.

E. DEVILLE, Esq., LL.D.,
Surveyor General.
Ottawa.

SIR,—I have the honour to submit the following interim report of my surveys of base lines and block outlines in the Peace River district, performed under your instructions dated March 7, 1904, and under additional ones wired to me at Lesser Slave lake on December 15.

I left Ottawa on March 21, arriving six days later in Edmonton, where special arrangements had to be made for the transportation and delivery at convenient points in the district where I was to survey, of the outfit required for a trip which was to last fully eighteen months and where the survey work would have to be conducted through country where no supplies could be procured and where transportation is not only limited but most primitive.

On April 6, whilst in Edmonton organizing my party and completing the final arrangements, word came to me by freighters returning from Lesser Slave lake that part of my outfit, principally hardware, had not reached its destination, but had been left along the route, that the ice on the Lesser Slave river had already broken in many places and that the travel on Athabaska river itself would soon be unsafe. As it was urgent that all my outfit should be brought at least as far as Lesser Slave lake, I decided not to wait for carts expected from Brandon, but taking the four carts then in Edmonton (the two forwarded from Saskatoon by Mr. Thos. Turnbull, D.L.S., and the two stored here in 1903 by Mr. Lonergan, D.L.S.), and two light wagons, I left at once for my destination. On April 11, I arrived at Athabaska Landing where, after loading grain, I continued my trip on Athabaska river, landing just in time at Moose Portage, for on the day of my arrival great masses of ice were floating down Athabaska river. From Moose Portage, which is about six miles east of the confluence of Lesser Slave river with Athabaska river, Mr. Selby, D.L.S., and myself joined forces, and a road was opened to the foot of Lesser Slave lake. Stony Point, where Messrs. Bredin and Cornwall's trading post on Lesser Slave lake is situated, was eventually reached towards the middle of May.

On my arrival, I learned that the bulk of my supplies was still in storage here with no prospect (as previously arranged) of having them freighted to Sturgeon lake, my future head-quarters, at an early date, there being then at Lesser Slave lake no adequate means of transportation. I must say that owing to a continued long spell of hot weather, the spring of 1904 was an exceptionally early one for this country, the snow having all disappeared and the large streams having become full of ice nearly a month sooner than is usual. Therefore the hauling of freight, which in ordinary seasons could have been done on winter roads, had to be stopped. Moreover, it happened that the transportation of goods by pack-animals was impossible, there being at the time at the lake no pack-animals fit to travel over a country still devoid of vegetation. I decided therefore to open a wagon road to Sturgeon lake, which lies in a southwesterly direction from Lesser Slave lake, and is sixty-five miles distant from it. After three weeks of steady work, Sturgeon lake was reached with sufficient supplies to last

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me three or four months. For my wagons and carts, I then substituted pack saddles and started for the initial point of my survey, (which is the intersection of the sixth meridian with the twentieth base line) by travelling on an old pack trail which for five miles follows the eastern shores of Sturgeon lake. At three miles north of the lake, we came to the regular trail to Birch hills and Ghost river and travel improved very much. This trail which passes north of Puskwaskow (Grassy) lake follows the valley of the river of the same name and runs through a country timbered mostly with poplar woods. The trail was followed as far as its intersection with the sixth meridian, where a cache of supplies was built. Continuing now my voyage in a northerly direction, with lighter loads, I opened twenty miles more of road to the intersection of the twentieth base line with the sixth initial meridian established by Mr. W. T. Thompson, D.T.S., in 1883.

Description of the country along the sixth meridian between the twentieth and the seventeenth base lines.

(NOTE.—Descriptions of the townships surveyed have been taken from this report and published as part of Appendix No. 29).

This completed the survey of the sixth initial meridian for the season. Previous to that, there had been at different times, severe snow storms and the feed for the horses had become so scarce and poor that a month before I had been compelled to send to Prairie river half of my pack animals, fearing that if I kept them much longer here, they would certainly die. With the general altitude of the country continually increasing and our coming to a pine belt with not a vestige of grass, I did not see the least chance of continuing the survey in this district at that late season. So, after leaving sufficient posts for the continuation of this survey at a more favourable time, I reluctantly returned to the northeast corner of township 68, range 1, where I began the survey of the eighteenth base line, easterly from the sixth initial meridian.

Description of the country along the eighteenth base line in ranges 23, 24, 25 and 26, and the fractional range 27, all west of the fifth meridian.

(NOTE.—Descriptions of the townships surveyed have been taken from this report and published as part of Appendix No. 29).

We were now in the last days of November. The ground was frozen hard to a great depth, and as all the creeks were dry and the ground still bare of snow, no water could be procured for the use of the camp. Grain which had been ordered months before had not yet arrived and the animals could not subsist much longer on the poor feed which they could pick up here and there. So I decided to close the survey work in this district and to return to Prairie river via Sturgeon lake, in order to organize for winter work. Whilst waiting for definite instructions regarding this work I made a trip to the eighteenth base line and succeeded in placing at about thirty miles intervals and close to the base line, two caches of supplies and iron posts which will greatly facilitate my survey operations during the next season. On my return to Prairie river, I received your message requesting that I should produce the nineteenth base line westerly from range fourteen, where Mr. Edgar Bray, D.L.S., had left it a few months before. The final arrangements for carrying this work having been completed in Lesser Slave lake and at Prairie river, I removed my camp to the northeast corner of township 72, range 14, west of the fifth meridian, the starting point of my survey.

Description of the country along the nineteenth base line westerly from the northeast corner of township 72, range 15, west of the fifth meridian.

(NOTE.—Descriptions of the townships surveyed have been taken from this report and published as part of Appendix No. 29).

Between Lesser Slave lake and West Prairie river, a distance of fifteen miles, the country is undulating and covered with scattered bluffs of poplar and spruce and clumps of willows with large areas of prairie land with good soil intervening. This section is well irrigated by East Prairie river, Iroquois creek, West Prairie river, Little Smoky river and their numerous tributaries. Many settlers have taken up land

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but their efforts have been generally directed to cattle raising for which any amount of good hay can be easily procured. Travelling northerly, one finds a still more open country.

From West Prairie river to the sixth initial meridian, a distance of sixty miles, lies a rolling or undulating country, wooded with spruce, poplar, birch, cottonwood, balm of Gilead and jackpine on the ridges. Some large spruce is found on Hunter's mountain, in ranges 15 and 16. Further west, the forest has in places suffered greatly through the inroads of destructive fires started by careless miners in the Klondyke rush of 1896. This is particularly the case along such streams as Little Smoky, Simonette and Moose rivers, where the only remaining serviceable timber is found in narrow belts in the flats along these streams.

Drift lignite was seen along the Little Smoky river.

Drift coal was found along the banks of Moose river and in the cut banks of this stream were seen indications of the same mineral.

The quality of the soil is pretty uniform, being a black or sandy loam from 3 to 10 inches deep overlying a subsoil of hard clay. Whenever the fire has overrun the country, the top soil has disappeared and left the clay exposed.

In the vicinity of Hunter's mountain, Dessaline's mountain and other minor elevations crossed by the 19th base line, the land is stony in places and near the rivers much broken by deep gulches and ravines.

South of Sturgeon lake which lies in townships 70 and 71, range 24, west of the fifth meridian, the country is partly open and would be well suited for cattle raising.

The summer season of 1904 was a very dry one. Inconvenience was frequently experienced from the smoke of forest fires fanned by high winds and burning in all directions, which kept up the nuisance for weeks and interfered at times with the survey.

During the summer days, the heat is generally tempered by cool breezes blowing from the direction of the Rocky mountains in the southwest. In summer or winter a northeast wind is sure to bring stormy weather which will last two or three days, i.e. till wind subsides. Owing possibly to the altitude of the country, (2,500 feet above sea), where I was surveying and the vicinity of the mountains, the nights were always cool and summer frosts occurred often. Such summer frosts are not infrequent at Lesser Slave Lake settlements. The lowest temperature registered last winter was 38° below zero and occurred in the latter part of December and in the month of January. After a few days, however, the temperature would rise considerably. The snow which was 30 inches deep on the level had all disappeared at the end of February. The growth of the native grasses is however retarded to such an extent that it is not of much account before June. But after that date in ordinary years with average rainfall the vegetation will grow with great profusion and rapidity.

I have the honour to be, sir,

Your obedient servant,

ARTHUR SAINT-CYR.

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APPENDIX No. 25 TO THE REPORT OF THE SURVEYOR GENERAL.
REPORT OF HENRY W. SELBY, D.L.S.

SURVEY OF BLOCK OUTLINES IN PEACE RIVER DISTRICT.

TORONTO, March 4, 1905.

E. DEVILLE, Esq., LL.D.,
Surveyor General,
Ottawa.

SIR,—I have the honour to submit the following report of my field operations during the past season in the Peace river district.

On February 24, 1904, whilst still at subdivision work in township 36, range 7, west of the 5th meridian, I received your telegram asking if I would go to the Peace river district on the survey of block outlines, which work I accepted.

On February 27, at Red Deer I received your telegram asking me to meet Messrs. Wallace and Saint-Cyr on March 1, at Calgary, to discuss organization for Peace river surveys, which I accordingly did and spent the day in discussing the several questions relating to supplies and transportation and we decided to go on March 2 to Edmonton and order our supplies to be forwarded to Lesser Slave Lake.

This occupied our time until the 5th when I returned to Red Deer, paid off my party and arranged for the transportation of my outfit to Edmonton.

As the season was so far advanced and my returns of subdivision work had to be completed and the instructions for the new work to be received, I decided to go with Mr. Saint-Cyr to Ottawa to save time.

I left for the latter place on the 7th where I remained until the 19th getting information and filing my field notes of subdivision work and answering memoranda on examination thereof.

Leaving Ottawa in company of Mr. Saint-Cyr I arrived in Edmonton on March 29, and in conformity with your instructions dated March 7, I proceeded to organize my party. We were informed that there had been so much traffic over the route to Slave lake that there was not a bit of hay or oats to be had all the way out, we therefore bought several tons of hay and hired teams to freight it to Athabaska Landing and to Moose Portage where we were obliged to leave Athabaska river as the ice was unsafe to travel on any further.

We left Edmonton on April 6, and reached Moose Portage on the 14th. We began cutting a road from this point towards Lesser Slave lake, a distance of about 60 miles and after a most trying time and meeting and overcoming all the obstacles I think it were possible to meet on such work in addition to the horse feed giving out we arrived at the east end of Slave lake on May 4 only to find the ice of the lake beginning to move, contrary to our information and expectations, other years it was claimed the lake was safe to cross up to the middle of May; we were therefore obliged to wait until the ice went out and on May 17 hired a York boat from the Hudson's Bay Company, in which we reached the west side of the lake on the 20th; here I parted company with Mr. Saint-Cyr and his party and went into camp on the north side of Buffalo bay to await the arrival of the horses which had been sent by the pack trail around the north side of the lake.

There being very little feed up to this time the horses were in very poor condition when they reached there on the 26th, having a few bags of oats on hand at the lake I gave them a few days rest until their sores and lameness left them, and on June 1 started for Peace River landing. The road thereto was so bad in places that I made

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a lot of repairs and cut out new roads around bad holes and reached Peace River landing on June 9. On the 10th through the kindness of the Hudson's Bay Company, who loaned me a large boat, I crossed my outfit over Peace river and camped on the west side, the horses all swam the river safely except one which apparently took cramps or heart failure and sank without an effort.

The road from Peace river to Dunvegan was in very good condition and the grass improving, we reached the 21st base line in range 4 on the 16th, here I camped until I could get some supplies which had been sent to Dunvegan and finding it impossible to cross Muddy creek we went north 12 miles and then west into the 5th range crossing the west branch of Muddy creek and following the base line west to the east limit of the 6th range where my work began.

I was very pleased to get at my work on June 24 after such a prolonged and hazardous trip: I was just congratulating myself that our troubles were nearly over, when the next day we cut the line out to the bank of Peace river (810 feet above the water) only half a mile from camp. Having been informed that I could use wagons on the west side of the river I crossed them over at a point about five miles north of the line, but upon examining the country to the west, I had to abandon them and use pack trains all summer.

The survey of the 21st base line to the boundary of British Columbia and of the east boundary of township 81 and 82, range 13, lasted till September 27.

I cut a trail from Peace river northward to make a connection with the 22nd base line, but after spending days in the effort to find it I had to abandon this scheme and send my outfit down the river on a raft and take the horses over the St. John's road to Dunvegan.

My next work was to run the 6th meridian north from the 22nd to the 23rd base line.

Having arrived at Dunvegan with horses and outfit on October 19, and while giving the outfit some needed repairs I started out for the meridian on the 24th and had to cut a trail most of the way from the St. John's road and reached the starting point on November 2, and finished the line to the 23rd base on the 30th, when we began running the 23rd base line, but the snow got so deep the horses could not paw, and as there was absolutely nothing for them to eat in the burnt slash we were running through, after cutting nearly four miles of the line I decided to quit and while awaiting instructions from the Surveyor General moved the outfit to the 23rd base line where on December 16, I began running the east boundary of townships 84 and 83 in range 3, at which I continued until January 12, when I was instructed to close operations, which I did and moved camp to Hay lake where I had a corral built by Mr. H. Tremblay, an agent of the Hudson's Bay Company. I left Hay lake camp on January 19, and on February 6 had the men all paid off at Edmonton, and on February 13, reported to you at Ottawa. Having given this brief report of the work done during the past season I will now describe the territory traversed.

It is more suitable for ranching than general cultivation, the soil for the most part being very shallow and underlaid with clay which is very hard, so that the water will not soak through, this causing land slides in many places; there are numerous ravines and coulees, and some good timber a detailed statement of which is given in the annexed report according to the lines run.

(NOTE.—Descriptions of the townships surveyed have been taken from this report and published as part of Appendix No. 29).

I have the honour to be, sir,

Your obedient servant,

HENRY W. SELBY.

METEOROLOGICAL REPORT.

SESSIONAL PAPER No. 25a

Compiled from observations taken by Mr. Selby during the course of the above survey.

| Date. | Place. | TEMPERATURE. | | | Barometer. | Humidity of air. | Direction of Wind. | Rainy days. | Snowy days. | Fair days. | Days completely cloudy. | Auroras. | Thunder storms. | Fogs. | Number of hours of bright sunshine. |
|----------|----------------------------|--------------|--------|--------|------------|------------------|--------------------|-------------|-------------|------------|-------------------------|----------|-----------------|-------|-------------------------------------|
| | | 7 a.m. | 2 p.m. | 9 p.m. | | | | | | | | | | | |
| 1901. | | | | | | | | | | | | | | | |
| June 17. | 8 miles north of Dunvegan | 51 | 52 | 68 | 28.33 | 41 | S.W. | | | 1 | | | | | 12 |
| " 18. | N. By., Tp. 82-4-6. | 51 | 51 | 63 | 28.25 | 69 | S.W. by W. | | | 1 | | | | | 12 |
| " 19. | " " 82-4-6. | 57 | 73 | 48 | 28.29 | 50 | S.W. by W. | | | 1 | | | | | 14 |
| " 20. | " " 82-4-6. | 54 | 66 | 57 | 28.21 | 70 | S.W. | | | 1 | | | | | 1 |
| " 21. | Sec. 31, Tp. 81-4-6. | 53 | 59 | 42 | 28.01 | 70 | S.W. | | | 1 | | | | | 0 |
| " 22. | At Muddy Creek, Tp. 81-5-6 | 49 | 57 | 49 | 28.61 | 92 | N.W. by W. | 1 | | | | | | | 0 |
| " 23. | E. By., Tp. 81-4-6 | 48 | 61 | 56 | 28.34 | 80 | N.W. by N. | 1 | | | | | | | 0 |
| " 24. | Sec. 32, Tp. 80-5-6 | 49 | 70 | 60 | 28.53 | 49 | N.W. by W. | | | 1 | | | | | 0 |
| " 25. | " " 81-6-6 | 57 | 67 | 60 | 28.48 | 53 | W. | | | 1 | | | | | 12 |
| " 26. | " " 81-6-6 | 62 | 74 | 57 | 28.30 | 65 | S.W. by W. | | | 1 | | | | | 10 |
| " 27. | " " 81-6-6 | 63 | 76 | 51 | 28.25 | 94 | N.W. by W. | 1 | | | | | | | 14 |
| " 28. | " " 81-6-6 | 43 | 64 | 78 | 28.31 | 43 | W. | | | 1 | | | | | 13 |
| " 29. | " " 81-6-6 | 64 | 76 | 54 | 28.35 | 55 | N.W. by W. | | | 1 | | | | | 14 |
| " 30. | " " 80-6-6 | 63 | 78 | 66 | 28.25 | 66 | W. | 1 | | | | | | | 12 |
| July 1. | " " 80-6-6 | 61 | 72 | 61 | 28.42 | 57 | W. | | | 1 | | | | | 8 |
| " 2. | " " 80-6-6 | 63 | 78 | 56 | 28.53 | 79 | N.W. by W. | | | 1 | | | | | 12 |
| " 3. | " " 80-6-6 | 71 | 82 | 60 | 28.50 | 66 | N.E. | | | 1 | | | | | 14 |
| " 4. | " " 80-6-6 | 64 | 74 | 69 | 28.20 | 63 | S.E. by E. | | | 1 | | | | | 11 |
| " 5. | " " 80-6-6 | 72 | 82 | 60 | 28.33 | 51 | S.W. | | | 1 | | | | | 12 |
| " 6. | " " 80-6-6 | 62 | 68 | 47 | 28.33 | 93 | O. | | | | | | | | 4 |
| " 7. | " " 80-6-6 | 52 | 77 | 42 | 28.25 | 62 | S.W. by W. | | | 1 | | | | | 2 |
| " 8. | " " 80-6-6 | 61 | 72 | 56 | 28.33 | 65 | S.W. | | | 1 | | | | | 2 |
| " 9. | " " 80-6-6 | 65 | 85 | 62 | 28.22 | 89 | S.W. by S. | 1 | | | | | | | 2 |
| " 10. | " " 80-6-6 | 64 | 76 | 62 | 28.25 | 60 | W. | | | 1 | | | | | 12 |
| " 11. | " " 80-6-6 | 52 | 82 | 64 | 28.33 | 48 | W. | | | 1 | | | | | 14 |
| " 12. | " " 80-6-6 | 55 | 69 | 45 | 28.20 | 78 | N.W. by W. | 1 | | | 1 | | 1 | | 0 |
| " 13. | " " 80-6-6 | 51 | 60 | 56 | 28.74 | 71 | W. | 1 | | | 1 | | | | 0 |
| " 14. | " " 80-6-6 | 52 | 66 | 53 | 28.52 | 82 | W. | 1 | | | 1 | | | | 0 |

Ice on water at 5 a.m.

METEOROLOGICAL REPORT.

Compiled from observations taken by Mr. Selby during the course of the above survey.

| Date. | TEMPERATURE. | | | Barometer. | Humidity of air. | Direction of Wind. | Rainy days. | Snowy days. | Fair days. | Days completely cloudy. | Auroras. | Thunder storms. | Fogs. | Number of hours of bright sunshine. | |
|---------|--------------|--------|--------|------------|------------------|--------------------|-------------|-------------|------------|-------------------------|----------|-----------------|-------|-------------------------------------|----|
| | Place. | | | | | | | | | | | | | | |
| | 7 a.m. | 2 p.m. | 9 p.m. | | | | | | | | | | | | |
| July 15 | 36 | 36 | 36 | 80-7-6 | 48 | 56 | 38 | S.W. by S. | 1 | | | | | | 14 |
| " 16 | " | 36 | 48 | 80-7-6 | 45 | 68 | 48 | S.W. by W. | | 1 | | | | | 12 |
| " 17 | " | 36 | 58 | 80-7-6 | 56 | 72 | 58 | S.W. | | 1 | | | | | 12 |
| " 18 | " | 34 | 46 | 80-7-6 | 54 | 52 | 46 | S.W. by W. | | 1 | | | | | 11 |
| " 19 | " | 34 | 48 | 80-7-6 | 47 | 70 | 48 | N.E. by N. | | 1 | | 1 | | | 9 |
| " 20 | " | 34 | 52 | 80-7-6 | 45 | 76 | 52 | N.E. by N. | | | | 1 | | | 9 |
| " 21 | " | 34 | 92 | 80-7-6 | 49 | 92 | 58 | S.W. | | | | | | | 10 |
| " 22 | " | 31 | 81 | 80-7-6 | 65 | 81 | 58 | S.W. by W. | | 1 | | | | | 11 |
| " 23 | " | 35 | 60 | 80-8-6 | 54 | 60 | 47 | S.W. by W. | | 1 | | | | | 10 |
| " 24 | " | 35 | 66 | 80-8-6 | 52 | 66 | 44 | S.W. by W. | | 1 | | | | | 11 |
| " 25 | " | 33 | 76 | 80-8-6 | 56 | 76 | 50 | O. | | 1 | | | | | 5 |
| " 26 | " | 33 | 72 | 80-8-6 | 43 | 72 | 64 | N.E. | | | | 1 | | | 10 |
| " 27 | " | 33 | 69 | 80-8-6 | 54 | 69 | 58 | S.W. | | | | 1 | | | 11 |
| " 28 | " | 33 | 75 | 80-8-6 | 53 | 75 | 49 | S.W. | | | | 1 | | | 12 |
| " 29 | " | 33 | 68 | 80-8-6 | 53 | 68 | 51 | S.W. | | | | 1 | | | 6 |
| " 30 | " | 33 | 68 | 80-9-6 | 54 | 68 | 41 | N.W. by W. | | 1 | | | | | 10 |
| " 31 | " | 33 | 67 | 80-9-6 | 54 | 67 | 45 | S.W. by W. | | 1 | | | | | 4 |
| Aug. 1 | " | 33 | 72 | 80-10-6 | 54 | 72 | 42 | S.W. by W. | | 1 | | | | | 6 |
| " 2 | " | 35 | 66 | 80-10-6 | 53 | 66 | 45 | W. | | 1 | | | | | 1 |
| " 3 | " | 34 | 70 | 80-10-6 | 53 | 70 | 50 | S.W. by W. | | 1 | | | | | 3 |
| " 4 | " | 33 | 68 | 80-10-6 | 46 | 68 | 51 | S.E. | | 1 | | | | | 2 |
| " 5 | " | 33 | 73 | 80-10-6 | 53 | 73 | 49 | S.E. by E. | | | | | | | 7 |
| " 6 | " | 33 | 70 | 80-10-6 | 51 | 70 | 52 | S.E. | | | | | | | 9 |
| " 7 | " | 33 | 70 | 80-10-6 | 50 | 70 | 58 | S.W. by W. | 1 | | | 1 | | | 3 |
| " 8 | " | 6 | 68 | 81-10-6 | 53 | 68 | 50 | S.W. | | 1 | | | | | |
| " 9 | " | 6 | | 81-10-6 | | | | | | | | | | | |
| " 10 | " | 6 | | 81-10-6 | | | | | 1 | | | | | | |
| " 11 | " | 6 | | 81-10-6 | | | | | 1 | | | | | | |
| " 12 | " | 6 | | 81-10-6 | | | | | 1 | | | | | | |
| " 13 | " | 6 | | 81-10-6 | | | | | 1 | | | | | | |
| " 14 | " | 6 | | 81-10-6 | | | | | | | | | | | |
| " 15 | " | 6 | | 81-10-6 | | | | | | | | | | | |
| " 16 | " | 6 | 68 | 81-10-6 | 50 | 68 | 54 | S.W. | | | | 1 | | | |
| " 17 | " | 6 | 68 | 81-10-6 | 51 | 68 | 54 | N.W. | | | | | | | 10 |

METEOROLOGICAL REPORT.

Computed from observations taken by Mr. Selby during the course of the above survey.

| Date. | Place. | TEMPERATURE. | | | Barometer. | Humidity of Air. | Direction of Wind. | Rainy days. | Snowy days. | Fair days. | Days completely cloudy. | Auroras. | Thunder storms. | Fogs. | Number of hours of bright sunshine. |
|---------|------------------------------------|--------------|--------|--------|------------|------------------|--------------------|-------------|-------------|------------|-------------------------|----------|-----------------|-------|-------------------------------------|
| | | 7 a.m. | 2 p.m. | 9 p.m. | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| 1904. | | | | | | | | | | | | | | | |
| Oct. 5. | E. Bdy., Tp. 83-13-6. | 25 | 36 | 26 | 28.36 | | | | | 1 | | | | | |
| " 6. | " " 84-13-6. | 5 | 38 | 27 | 28.36 | | | | | 1 | | | | | |
| " 7. | " " 84-13-6. | 16 | 36 | 26 | 27.91 | | | | | | | 1 | | | |
| " 8. | " " 84-13-6. | 16 | 52 | 28 | 27.46 | | | | | 1 | | | | | |
| " 9. | " " 84-13-6. | 32 | 56 | 29 | 27.47 | | | | | | | 1 | | | |
| " 10. | " " 84-13-6. | 22 | 61 | 31 | 27.55 | | | | | 1 | | | | | |
| " 11. | " " 83-13-6. | 34 | 48 | 36 | 27.63 | | | | | | 1 | | | | |
| " 12. | Peace River, Tp. 82-12-6. | 30 | 49 | 36 | 28.96 | | | | | 1 | | | | | |
| " 13. | On Peace River. | 30 | 41 | 36 | 28.96 | | | | | 1 | | | | | |
| " 14. | " " | 31 | 47 | 38 | 29.00 | | | | | 1 | | | | | |
| " 15. | " " | 30 | 49 | 40 | 29.00 | | | | | 1 | | | | | |
| " 16. | Dunvegan | 36 | 50 | 39 | 28.95 | | | | | 1 | | | | | |
| " 17. | " " | 37 | 48 | 33 | 29.10 | | | | | 1 | | | | | |
| " 18. | " " | 35 | 52 | 35 | 29.01 | | | | | 1 | | | | | |
| " 19. | " " | 39 | 50 | 50 | 28.98 | | | | | 1 | | | | | |
| " 20. | " " | 42 | 51 | 40 | 29.28 | | | | | 1 | | | | | |
| " 21. | " " | 38 | 44 | 44 | 29.31 | | | | | | 1 | | | | |
| " 22. | " " | 39 | 54 | 45 | 28.91 | | N. | | | 1 | | | | | |
| " 23. | " " | 37 | 55 | 28 | 29.56 | | N. E. by N. | | | 1 | | | | | |
| " 24. | " " | 28 | 47 | 50 | 29.40 | | N. | | | 1 | | | | | |
| " 25. | St. John trail, north of Dunvegan. | 35 | 62 | 32 | 28.55 | | N. | | | 1 | | | | | |
| " 26. | " " | 26 | 64 | 46 | 28.12 | | N. | | | 1 | | | | | |
| " 27. | Muddy Creek | 26 | 56 | 35 | 27.98 | | N. | | | 1 | | | | | |
| " 28. | " " | 17 | 52 | 28 | 27.80 | | N. | | | 1 | | | | | |
| " 29. | N. Bdy. Tp. 84-2-6 | 28 | 53 | 38 | 27.85 | | N. | | | 1 | | | | | |
| " 30. | " " 84-1-6. | 39 | 44 | 41 | 27.05 | | N. | | | 1 | | | | | |
| " 31. | " " 84-1-6. | 32 | 52 | 44 | 27.02 | | N. | | | | | | | | |
| Nov. 1. | E. Bdy. " 85-1-6. | 33 | 50 | 37 | 26.30 | | N. | 1 | | | | 1 | | | |
| " 2. | " " 85-1-6. | 31 | 47 | 38 | 26.30 | | N. W. by W. | 1 | | | | | | | |
| " 3. | " " 85-1-6. | 26 | 44 | 29 | 26.60 | | N. W. by W. | | | 1 | | | | | |
| " 4. | " " 85-1-6. | 26 | 50 | 35 | 26.62 | | N. | | | 1 | | | | | |
| " 5. | Sec. 13 " 85-1-6. | 40 | 46 | 34 | 26.55 | | N. W. by W. | | | 1 | | | | | |

METEOROLOGICAL REPORT.

Compiled from observations taken by Mr. Selby during the course of the above survey.

| Date. | Place. | TEMPERATURE. | | | Barometer. | Humidity of air. | Direction of Wind. | Rainy days. | Snowy days. | Fair days. | Days completely cloudy. | Auroras. | Thunder storms. | Fogs. | Number of hours of bright sunshine. |
|---------|---------------------|--------------|--------|--------|------------|------------------|--------------------|-------------|-------------|------------|-------------------------|----------|-----------------|-------|-------------------------------------|
| | | TEMPERATURE. | | | | | | | | | | | | | |
| | | 7 a.m. | 2 p.m. | 9 p.m. | | | | | | | | | | | |
| 1904. | | | | | | | | | | | | | | | |
| Dec. 26 | E. Bdy., Tp. 84-3-6 | 34 | 11 | 15 | 27.37 | | O. | | | 1 | | | | | |
| " 27 | " " 84-3-6 | 5 | 11 | 11 | 26.32 | | O. | | | 1 | | | | | |
| " 28 | Sec. 1, Tp. 84-3-6 | 13 | 21 | 14 | 26.19 | | S.W. | | | 1 | | | | | |
| " 29 | " " 84-3-6 | 14 | 22 | 18 | 26.08 | | S.W. | | | 1 | | | | | |
| " 30 | " " 84-3-6 | 25 | 28 | 20 | 25.95 | | O. | | 1 | | | | | | |
| " 31 | " " 84-3-6 | 6 | 4 | 8 | 25.97 | | N.E. | | | | | | | | |
| 1905. | | | | | | | | | | | | | | | |
| Jan. 1 | " " 84-3-6 | 25 | 2 | 11 | 26.70 | | O. | | | 1 | | | | | 3 |
| " 2 | " " 84-3-6 | 11 | 15 | 18 | 26.49 | | S.W. by W. | | | | 1 | | | | |
| " 3 | " " 84-3-6 | 16 | 14 | 9 | 26.25 | | S.W. by W. | | 1 | | | | | | |
| " 4 | " " 84-3-6 | 8 | 21 | 5 | 26.57 | | S.W. by W. | | | 1 | | | | | |
| " 5 | " " 84-3-6 | 3 | 20 | 3 | 26.70 | | S.W. by W. | | | 1 | | | | | |
| " 6 | " " 84-3-6 | 15 | 12 | 11 | 27.30 | | S.W. by W. | | | 1 | | | | | |
| " 7 | " " 84-3-6 | 18 | 7 | 2 | 27.27 | | S.W. by W. | | | 1 | | | | | |
| " 8 | " " 84-3-6 | 19 | 1 | 2 | 27.35 | | O. | | | | 1 | | | | |
| " 9 | " " 84-3-6 | 5 | 14 | 12 | 27.17 | | S.W. by N. | | | 1 | | | | | |
| " 10 | " " 83-2-6 | 4 | 11 | 2 | 27.30 | | S.W. by W. | | | 1 | | | | | |
| " 11 | " " 83-2-6 | 9 | 1 | 2 | 27.15 | | W. | | | 1 | | | | | |
| " 12 | " " 83-2-6 | 12 | 2 | 25 | 27.23 | | W. | | | 1 | | | | | |
| " 13 | " " 83-2-6 | 32 | 2 | 35 | 27.22 | | N. | | | 1 | | | | | |
| " 14 | Tp. 84-3-6 | 50 | 14 | 12 | 27.52 | | S.W. | | | 1 | | | | | |
| " 15 | " 82-4-6 | 25 | 1 | 29 | 27.25 | | S.W. | | | 1 | | | | | |
| " 16 | " 82-4-6 | 29 | 8 | 2 | | | N.W. | | | | | | | | |
| " 17 | Dunvegan | 12 | 10 | 10 | | | W. | | | | | | | | |
| " 18 | " | 20 | 17 | 8 | 27.05 | | N.E. | | 1 | | | | | | |
| " 19 | Tp. 82-4-6 | 2 | 2 | 6 | 27.25 | | E. | | 1 | | | | | | |
| " 20 | Burnt river. | 4 | 6 | 24 | 27.35 | | E. | | | | | | | | |
| " 21 | Peace | 34 | 32 | 30 | 27.58 | | S.E. | | | 1 | | | | | |
| " 22 | " | 42 | 8 | 36 | 27.57 | | E. | | | 1 | | | | | |

APPENDIX No. 26 TO THE REPORT OF THE SURVEYOR GENERAL.
REPORT OF J. N. WALLACE, D.L.S., 1904.

SURVEY OF BLOCK OUTLINES IN PEACE RIVER DISTRICT.

CALGARY, ALTA., March 24, 1905.

E. DEVILLE, Esq., LL.D.,
Surveyor General,
Ottawa.

SIR,—I have the honour to submit the following report of my survey of block outlines in the Peace River country, under your instructions of March 7, 1904.

I left Calgary on March 2 and went to Edmonton, where arrangements were made to have the supplies and heavy outfit sent forward by freighters to Lesser Slave lake. These left Edmonton on March 10. I left myself with the survey party, on March 25.

In view of the interest taken in the Peace River country, and as the route followed was that nearly always taken, it will be shortly described.

From Edmonton to Peace River Crossing is three hundred and sixty miles. It is a further distance of seventy-five miles by this route to Spirit river and another sixty miles to Grand prairie. The Vermilion is two hundred miles down the river from the crossing. The distance to Spirit river can be shortened by using a direct route from the head of Lesser Slave lake, but it can only be followed by pack horses in summer, as it is not cut out wide enough for sleighs. Some work was done last season in opening a sleigh road from the lake to Grand prairie, but it is not completed west of Simonette river. These routes would be some fifty miles shorter than the distances stated above.

We travelled the hundred miles due north from Edmonton to Athabaska Landing in four days with sleighs. There is, however, a weekly stage which makes the journey in two days, summer and winter. We left the landing on March 30 and proceeded seventy-five miles up Athabaska river on the ice, to where Little Slave river joins it, and then travelled up this latter river for forty miles to the east end of Lesser Slave lake. Leaving the east end of the lake we travelled on the ice, following along the south shore, for some thirty miles, and then crossed the lake at the narrows, where it is nine miles wide. The route then follows the north shore for thirty miles to the west end of the lake, the total distance on the lake being seventy miles. We reached here on April 6, having travelled two hundred and eighty-five miles from Edmonton in eleven days.

In summer time the same route is followed but boats and scows are used on the water. Little Slave river is the greatest drawback on this route. In winter water floods over the ice when any thaw occurs, and the river is the last water to freeze over and the first ice to break up in the spring. This is due to the swift current and the many rapids. For the same causes it is a troublesome river on which to track up boats in the summer. There is a road cut out on land, in the neighbourhood of the river, on the north side, from Moose Portage to the east end of Lesser Slave lake. Moose Portage is a stopping place on Athabaska river sixty miles above the landing. The road is, however, a rough one, and but little used, and it is necessary to raft an outfit across Moose river on the way.

Last season we were the last outfit to travel on the ice up Lesser Slave river, and we barely managed to do so. This year (1905) the season is considerably earlier than last, but last year was the more usual.

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At the west end of Lesser Slave lake there is a large settlement, a post office, English and Roman Catholic missions and the trading posts of Messrs. Bredin and Cornwall and the Hudson's Bay Company. Nearly everything can be obtained there, but prices are extremely high.

From the lake the journey was continued on April 18. Several days had been required to send back to the east end of the lake to bring up the most necessary supplies. Wagons were now used to move the outfit across the eighty miles of road to Peace River Crossing. This road is in very bad condition in early summer. Travelling on it should, if possible, be got over before sleighing ceases.

At Peace River crossing there is some settlement on both sides of the river. About twelve miles up the river on the left bank the land is reputed to be the best in the upper Peace River district, but the available area is very small, as it is restricted to the bottom lands in a narrow deep valley.

We crossed Peace river on April 28 by the aid of the mission steamer, the ice in the river having gone out on April 10, a few days earlier than usual. After travelling sixty miles on a very fine road on the high land through an open country, we reached Dunvegan on May 5, and again crossed back to the right bank of the river. This double crossing is required as the country is too rough for travelling on the right bank between the crossing and Dunvegan.

There is no settlement at Dunvegan. It is merely a name and a trading post. Sixteen miles south is Spirit River settlement, which seems the most popular locality in the upper Peace River country. We arrived here on May 10.

There are no difficulties to be encountered on this journey from Edmonton by a person travelling by himself either in summer or winter. It rarely happens that it is necessary to camp out, as there are stopping houses distributed along almost the whole route. He should have enough supplies and cooking utensils to carry him through, and his blankets, as these things are not supplied at the stopping houses, although cooking facilities are obtainable.

A heavy outfit, however, should leave Edmonton early enough to travel by sleigh to the journey's end. It is advisable to leave Edmonton as early as February 15, to be sure of the ice, and because at most of the stopping places there is only enough hay put up to last the earlier part of the freighting season. The entire journey from Edmonton to Spirit river is covered by those who have loads in about twenty-five days, but if a person cannot get his load through before the snow melts it may take six weeks.

At Spirit river I left my wagons, and for the rest of the season till October used pack horses entirely.

Work was begun on the twentieth base on May 16. Seventy-seven miles were run westerly to the boundary of British Columbia and six miles southerly along the east of township 76, range 13, the whole being completed on September 27, after which I returned to Spirit river. On October 18 we left Spirit river, after many delays caused chiefly by the difficulty of getting men. After travelling about seventy-five miles south-east, we reached the intersection of the sixth meridian and the nineteenth base, having had to raft across Smoky river on the way.

The nineteenth base was run to the end of twelve ranges, a distance of seventy-two miles, and then the east boundaries of townships 73 and 74 were run north, the whole being finished on January 10, 1905.

I was compelled to stop work on January 15, through want of feed for the horses and shortness of supplies, after making an unsuccessful attempt to run the gap of six miles along the east of township 75, range 13, which would have closed the season's work on the correction line.

On January 28, I reached Spirit river, having completed one hundred and sixty-seven miles during the season.

At Spirit river a settler was engaged to take the party to Edmonton, which was reached on February 20, after an absence of eleven months.

TWENTIETH BASE LINE.

This base line, forming the north boundary of township 76, runs through continuous timber over almost its entire length of seventy-seven and a quarter miles from the sixth meridian to the boundary of British Columbia. Along ranges 1 to 5, the timber is composed of a forest of poplar running to twenty inches diameter, with scattered spruce and a few birch. West of range 5, the country has been devastated by fire, which occurred some fifteen years ago, and is now covered with much standing and fallen burnt timber. There are a few isolated patches of scorched green timber. The fallen logs are so large and numerous that travelling is only possible with pack horses, and even then a trail must be first cut out. This area of burnt country extends westerly some twenty-four miles to the west end of range 9. For a couple of miles further west the timber is irregular and then again becomes very heavy, consisting of a heavy growth of green spruce and jack pine, with scattered poplar extending as far as range 11. So far the country has been of an undulating character. West of range 11 there are many low rolling hills and wide valleys with a growth of tangled willows and alders and scattered patches of poplar. This character continues to the centre of range 12, after which the hills continue, but patches of heavy timber are more common. The fractional range 13, extending across five sections, twenty-four chains and forty-six links, to the boundary of British Columbia, is generally more open than anything encountered previously along this base.

Along the boundary, and to the west, the country is of a rolling character, covered with small willows with patches of poplar and spruce at long intervals. Pouce Coupé prairie lies to the north and northwest of the end of this line. Its exact location could not be ascertained, but it is probable a small portion of it lies in the Territories, the greater portion being in British Columbia.

The foot hills are probably at least seventy miles west of the boundary of British Columbia. The Rockies themselves are only barely visible from the hilltops near the end of this base line.

No rivers or streams larger than a couple of feet wide cross this base line, except Burnt river, Saddle Mountain creek, Buckskin creek, and a branch of Pouce Coupé river in the last range. Burnt river, the largest, is about thirty feet wide at low water and seventy-five feet wide when in flood. It is much longer than shown on the maps. It rises in a small lake south of the base line in range 10. The creeks crossed by the base east of range 5, flow to Smoky river. West of this they all ultimately reach Peace river. Only one lake occurs on the base line.

The absence of large rivers has resulted in the country being burnt over again and again. There is nothing to stop a fire from sweeping the whole country from Smoky river to British Columbia.

It seems probable that west of range 6, the whole country is forest-covered for many miles to the north and south of this base line, excepting the small area of Pouce Coupé.

East of range 6, the thick timber extends four or five miles north. To the north of this there is a great deal of open country known as Grizzly Bear prairie and Spirit River prairie. It must be remembered that in the Peace River country the word 'prairie' simply means an open space, either large or small. Prairie, like that of southern Alberta, does not occur in the upper Peace River country, so far as my observation went. It is always accompanied more or less by bluffs of poplar. Even on the larger 'prairies,' such as Grand prairie and Spirit River prairie, it would seldom occur that a straight line could be run for two miles without encountering some patch of timber. The open spaces are, however, much greater than those covered by bush.

Spirit River prairie is some eighteen miles by ten miles in area. It forms an attractive looking country but, like most prairie areas in the district, suffers for want of more water than it has. There is a considerable settlement here, with Presbyterian and Roman Catholic missions and two trading posts. A post office is badly needed, a

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large amount of mail matter being now brought up to the settlement from Peace River crossing, a distance of seventy-five miles, by the courtesy of the Hudson's Bay Company, and Messrs. Bredin and Cornwall.

NINETEENTH BASE LINE.

This base line, forming the north boundary of township 72, begins at the sixth meridian at a point about eleven miles east of Smoky river.

The country east of the river is undulating and lightly covered with an irregular growth of small poplar and spruce. While there is no prairie or open country, the timber is nowhere of any size. The line crosses Smoky river about three miles north of a very pronounced horseshoe bend in the river, and about four miles north of an old Indian trail, known as the 'Lower Ford.'

Smoky river, at the intersection of the line, is six hundred and thirty-nine feet wide, the water being low at the time of survey. It flows in a precipitous ravine five to six hundred feet deep. There are too many rapids for the river to be navigable.

After crossing the Smoky, the base line passes through an undulating country generally timbered irregularly with small poplar and willows, the country gradually becoming more open till, at the middle of range 4, the line emerges on Grand prairie.

For twenty-six miles the base continues across the prairie country and then again enters the bush near the west end of range 8. The remainder of the line, to the end of range 12, is through a bush country without any open spaces other than small local patches.

The central line of Grand prairie does not run quite due east and west, and consequently its longest dimension is somewhat greater than its extent along the base line. It runs back east, a little to the south of the base, for some five miles from where the base first enters the prairie, and continues on to the northwest for about eight miles after the line leaves it. Its width runs from ten to twenty miles north and south. This would make a total area of about seventeen townships, which is probably a large, rather than a small estimate of its area. There are small bluffs of poplar nearly everywhere, which distinguish it greatly from what is termed prairie further south, but the open areas are enormously greater than those covered by bush. Excepting on Kleskun hill, the surface is gently rolling.

While there are a number of ponds and lakes, running water is very scarce over the whole prairie, only four small creeks intersect the whole twenty-six miles of the base line crossing the prairie. The soil is very shallow but the grass very good. West of Grand prairie, where the line runs through a bush country, the soil is very much better.

At Saskatoon lake, a few miles southwest of Bear lake, there is a small settlement, two trading posts, a Roman Catholic mission and a few settlers. The locality is very picturesque, and makes a very fine cattle country, if they are properly fed during the winter.

The season was beautifully fine. From the first of May to the end of August rain only fell on a total of sixteen days, spread about equally over this period. September had thirteen rainy days, with a little wet snow at the end which disappeared in a few days. After October 3, the weather again became very fine and remained so, till November 21, when a fall of three inches of snow occurred and remained on the ground. From then till the end of January there were only eleven days on which it snowed, the total depth being twelve inches at the latter date.

While it was an ideal season for surveying, except for the constant dread of fire and the difficulty of getting water, it was much too dry for agriculture.

The Chinook wind occurred during the winter over Grand prairie and Spirit river districts, but at long intervals. It has to travel so far from the mountains before reaching here that it has lost much of its warmth, and, as a rule, did not appreciably melt the snow. Except on one occasion, on January 17, the temperature never ex-

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ceeded 37 degrees when a westerly wind was blowing during the winter. On the occasion referred to, the depth of snow was reduced materially by the wind.

While these winds did not have much power to reduce the depth of snow once it had fallen, they undoubtedly tend to keep the weather dry and lessen the actual snow fall south of Peace river.

Although the temperature in the sun, during summer was quite as hot as is ever experienced in the southern part of the territories, yet when the direct rays of the sun are cut off the temperature is never excessive. Often, when it was painfully hot in the sun, the temperature in the shade would be only 75 or 80 degrees. The temperature falls rapidly after sundown, radiation being very great. Several times, during the months of July and August, although the days both before and after were oppressively hot, the temperature fell below freezing point at night. Whether cultivation, by letting in the heat of the long summer days into the ground, can neutralize this cooling by radiation is a matter of conjecture, but from the experience of many other localities, it seems reasonable to suppose it would have considerable effect.

In spite of all the difficulties that must be endured by the pioneers of a new country situated so far off from any town, the few settlers in the country seem perfectly satisfied to remain there, but a person going in with a family and having to support others than himself alone would have many trials before him.

Until some better transportation has been established, the high prices of even the absolute necessities of life, would be a very difficult proposition for a settler's family.

If railway communication could be made to almost any point on Peace river, it would enormously help the transportation problem. This river forms a magnificent highway from Fort St. John in British Columbia for nearly four hundred and fifty miles to Vermilion, and even further north if connection is made across the rapids there, to Lake Athabaska, thus affording access to the whole north country.

Unfortunately, Peace river flows for the most part in a very narrow valley nearly one thousand feet deep, and is thus difficult of approach. There are now three steamers on the river, two of them capable of carrying ten tons each, and able to make five miles an hour against the current.

In concluding this report, it may be well to point out that it refers almost entirely to the country south of Peace river.

I wish to record my appreciation of the services of my assistant, Mr. C. C. Smith, B.A., more especially for his uniform willingness to work after regular hours should occasion require it.

I have the honour to be, sir,

Your obedient servant,

J. N. WALLACE, *D.L.S.*

SESSIONAL PAPER No. 25a

APPENDIX No. 27 TO THE REPORT OF THE SURVEYOR GENERAL.
REPORT OF G. H. WATT, D.L.S.

INSPECTOR OF SURVEY CONTRACTS IN DISTRICT OF ALBERTA.

OTTAWA, February 28, 1905.

E. DEVILLE, Esq., LL.D.,
Surveyor General,
Ottawa.

SIR,—I have the honour to submit the following report on my field operations during the past season.

In compliance with your instructions, dated March 18, 1904, I left for Calgary April 26, and arrived there April 30. I was delayed about ten days awaiting the arrival of my baggage. Outside of this delay, I lost only four whole days during the season, three days on account of rain all day and one day on account of snow.

The country covered by my work lay chiefly west of the Calgary and Edmonton branch of the Canadian Pacific Railway. There were, however, several scattered contracts, one about sixty-five miles south of Calgary, one about forty miles east of Olds; two extending sixty-five miles north and west from Edmonton and one extending as far as seventy-five miles east of Edmonton. To get over this country necessitated a good deal of travelling, and this required time. The field work lasted from May 13 to December 17.

I took over some of the horses and wagons used by Mr. Pearce in 1903, and as my first work lay north of Edmonton, a distance of two hundred and forty-five miles north of Calgary, and as the horses were fresh off the pasture and not in good condition for such a long drive, I sent them by train to Edmonton and fed them up well to get them in good shape for the season's work.

I left Edmonton on Friday, May 13, and went into camp the first time, that day. My first work was the examination of the contract of R. Rinfret south and west of Lac la Nonne. This completed, I went north to Pembina river to the winter contract of Thos. Drummond. The roads in to these contracts were deep with water and mud in the spring and four-horse teams were used for long stretches of roads. The next work, the contract of C. E. Bourgault, lay south and west of Wabamun lake, and although there were direct trails from where I then was to Wabamun lake, they were not passable at this season, as the creeks were very high and the meadows full of water. I was thus compelled to take the well-travelled road back to Edmonton and go west on another main road to the work. The western end of this trail was, I think, the worst I had to use all summer. When this was completed, I went east about one hundred and twenty miles, to examine the winter contracts of Messrs. R. W. Cautley and J. L. Côté, on the Saskatchewan around Victoria. This work was unpleasant on account of the great number of sloughs, and on account of the showers of rain, which, although they were not usually heavy, were of almost daily occurrence, coming up suddenly in the afternoon or evening. On the way down to this work the creeks and streams were all full of water, but on my way back to Edmonton two weeks later, it was sometimes difficult to find enough water for camp purposes.

The next work lay along Red Deer river in ranges 4, 5 and 6 west of the fifth meridian, and consisted of the winter contracts of H. W. Selby, A. E. Farncomb and H. B. Proudfoot, all of which were to be inspected without delay. Leaving camp near Saddle lake mission July 1, I passed through Edmonton July 5, and camped on the Red Deer in range 4, west of fifth meridian on July 14, having travelled in the one move over

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two hundred and sixty-two miles of trail. From this camp work was done in one township by A. E. Farncomb, and one township done by H. B. Proudfoot. I moved from there to a camp on James river in range 5, and examined two more townships done by Mr. Proudfoot; and using pack horses I took a flying camp into Mr. Selby's contract and completed the examination of it. As there were not trails I had to pack in on the surveyed lines. I had two more camps in Mr. Proudfoot's work and from one of these, on Fallentimber river, I did work in one township surveyed by Mr. C. F. Miles.

I then went out to Olds over a lumbermen's winter trail (nearly all muskegs) for supplies preparatory to going farther south.

The trip to town with the whole outfit I found to be a necessity for several reasons. First, I bought supplies in the nearest town to my work to save freighting, and as the different trips lasted from three to five weeks, the quantities bought were small and I had to do all my buying in person in order to keep the cost within the allowance. Secondly, there was no trail running north and south through the work, and I had invariably to go out to the main trail from Calgary to Edmonton in order to reach the trail running into the next work. Thirdly, the roads were so rough and difficult that the wagons were constantly in need of repairs.

From Olds, I went to Didsbury and thence to a camp about ten miles south of the Little Red Deer mill, in township 30, range 4, west of the fifth meridian. I here examined part of the contract of John Aylen, and according to special instructions went to see C. F. Miles, to reach whose camp I had to travel over fifteen miles of a very rough pack trail.

From this district I went north again and examined the contracts of A. E. Farncomb, T. Drummond and G. Edwards, all of which were located on the old Rocky Mountain House trail, and then I went into W. F. O'Hara's contract just west of Medicine river, in townships 42, 43 and 44.

I then went to the contract of J. A. Carbert on Red Deer river, about forty-five miles east of Olds, and from there to Edmonton, and on to Lake St. Ann to the contracts of C. E. Bourgault and G. P. Roy, and then to examine the corner monuments of the winter contracts of R. Rinfret and T. Drummond, which were not built when I was there in the spring.

From the contract of Mr. Rinfret, I went south to that of W. F. O'Hara, west of Lacombe, which I could not complete before, and then south to the work of John Aylen and C. F. Miles, each of whom did not have much work done when I was first in their contracts.

When passing Olds, I stayed over a couple of days and ran a disputed line for a settler.

I moved camp into Calgary December 18 and disposed of my outfit and came home December 19.

The weather over the whole season was remarkably fine, the fall especially so. The trails in the unsettled parts were, in the early part of the season, very deep with mud, and were generally soft, but in the latter part of the season were much drier though very rough, and in some places stony and stumpy. In the bush one cannot turn out around a bad spot, but must keep to the road and go through the difficult places. At the end of the road I left my wagons in the bush, got out the pack saddles and got into many places by pack trains.

A great deal of moving about was caused by the contracts being scattered over a large tract of country extending about two hundred and twenty miles in a north and south direction, and one hundred and sixty miles in an east and west direction, and also by the fact that the number of contracts in the extremes of the work had to be visited twice on account of the work being only partially done when it was first gone over.

Those surveyors working in heavy or spruce woods thought it a hardship to have to cut a north to south outline the second time when the trial line did not strike the corner of the outline. I observed and heard of many ways taken to avoid cutting the

SESSIONAL PAPER No. 25a

line the second time. In the hill country a signal was placed at the township corner, in one case a large red ensign was used on a thirty-foot pole. The surveyor ran from the opposite corner till the flag came in view, he then calculated how far from the signal his line would strike if produced, and allowing for this correction he returned and began again on the true line. In fairly level, or even moderately hilly country, where the bush was thick or tall, such a method could not be used. Here the best method I heard of was to run one of the interior chords first, preferably, the one nearest the outline to be run, the distance to the township corners between which the outline was to be run was then measured from the ends of the chord line, and if it did not involve too much cutting the transit was run over the line from which the north outline or south outline was to be surveyed. In this way the surveyor could calculate fairly closely what angle to turn to strike the opposite township corner and if after these precautions the line did not strike the post it should come so near to it that very little widening of the trial line would be necessary.

I used a 4-inch Watts transit and found it very satisfactory. I used a spider's web in the diaphragm.

The 400-link chain which I used throughout the season is almost too long for rough bush country where there is much dead fall or many small hills, unless there are three men on the chain. With three men on the chain the man in the centre keeps the chain clear and takes the notes, using the clinometer from the middle or at any distance along it from which it may be found most advantageous to do so, as in going over a knoll where the front and rear chainmen are out of sight of each other. When only two chainmen are used, in passing such a knoll the front chainman drags the chain out full length and then comes back and puts in a pin at a convenient distance on the top of the hill, and the rear chainman after noting the slope shown by the clinometer moves up and the front chainman goes ahead to his end of the chain. I heard many complaints from contractors as to the size of pits and mounds found on the outlines of their work, and I saw very few full sized pits on the outlines run by the outliners working under daily pay for the department.

The frost which came early in the fall froze the grass before some of it was cured, and this fact proved a hardship when late in the fall I was in contracts where no settlers were convenient from whom to procure hay. In one contract I was forced to send my horses back 25 miles to the nearest settler to be fed hay, keeping only three ponies for moving camp. At the end of a week, the best of the three could barely carry a man out to where the others were being kept.

During the season I travelled two thousand miles in wagons and used pack saddles on two hundred miles of trail. I travelled on the road, moving camp, on one hundred and eleven days, and worked on the line ninety-three days, or parts of days, and sent in returns of four hundred miles of line surveyed.

I have the honour to be, sir,

Your obedient servant,

GEO. H. WATT.

APPENDIX No. 28 TO THE REPORT OF THE SURVEYOR GENERAL.

EXAMINATION PAPERS OF THE BOARD OF EXAMINERS FOR DOMINION LAND SURVEYORS

EXAMINATION FOR ADMISSION AS ARTICLED PUPIL.

XXV.

PENMANSHIP AND ORTHOGRAPHY.

(Time, 3 hours.)

Write a composition of not less than 200 words on the merits of Orthography and Penmanship :

ARITHMETIC AND LOGARITHMS.

(Time, 3 hours.)

Marks.

- | | |
|---|----|
| 1. The accumulated capital of \$1,250 with compound interest at five and a half per cent for 15 years is divided among three heirs in the proportions 1, 2 and 3. What does each heir get ? | 12 |
| 2. Prove rule for converting a recurring decimal to a vulgar fraction. | 12 |
| 3. Give result in a vulgar fraction of $(.91\bar{3})$ $(.05\bar{6})$ divided by $(6.72\bar{4})$ $(.0031\bar{8})$. | 12 |
| 4. By logarithms multiply $4.812\bar{3}$ by $.0038\bar{7}$ and extract the third root. | 12 |
| 5. $(2.345)^7$ is the 17th power of what number ? | 13 |
| 6. A and B can do a piece of work together in $2\frac{2}{3}$ days ; if A increase his speed by one-half, and B by one-third, the work is done in $1\frac{29}{43}$ days. How long will it take each to do the work alone ? | 13 |
| 7. The natural secant of an angle is 3.712857 ; the natural cotangent of an angle is 4.725901 ; the logarithmic sine of an angle is 8.427318 ; the logarithmic tangent of an angle is 0.728342 ; Find the angles. | 13 |
| 8. Find the numerical value of $\sin A + \cos B + \sec C$, where $A = 52^\circ 13' 15''$, $B = 18^\circ 20' 36''$, $C = 82^\circ 17' 19''$. | 13 |

SESSIONAL PAPER No. 25a

ALGEBRA.

Marks.

(Time, 3 hours.)

1. Write first five terms of $(a \pm b)^n$. 12
2. Factor $a^4 + b^4 + c^4 - 2a^2b^2 - 2b^2c^2 - 2c^2a^2$. 12
3. Find the H. C. F. of $x^4 - px^3 + px^2 - p^2x$, and $x^3 - p$. 13
4. Find the L. C. M. of $x^4 + 4x^2 + 16$, $x^5 + 2x^4 + 4x^3 + 8x^2 + 16x + 32$,
and $x^5 - 2x^4 + 4x^3 - 8x^2 + 16x - 32$. 13
5. Simplify $\frac{1}{x^2 - 19x + 84} - \frac{1}{x - 12x + 35}$ 13
6. Solve $\frac{a+b}{x-c} = \frac{a}{x-a} + \frac{b}{x-b}$ 13
7. Solve $\begin{aligned} 2x - 3y + 4z &= 4 \\ 3x + 5y - 7z &= 12 \\ 5x - y - 8z &= 5 \end{aligned}$ 12
8. Solve $\frac{1}{x} + \frac{1}{y} = 5$ 12
- $\frac{1}{x^2} + \frac{1}{y^2} = 13$

PLANE GEOMETRY.

(Time, 3 hours.)

Marks.

1. In a right angle triangle prove $a^2 + b^2 = c^2$ 12
2. In any triangle prove $a^2 + b^2 - 2ab \cos C = c^2$. 12
3. Divide a straight line a , so that $a(a-x) = x^2$ 12
4. If the opposite angles of a quadrilateral be equal, the opposite sides are equal. 12
5. Inscribe a pentagon in a given circle. 13
6. Describe a circle about a given triangle. 13
7. Draw through a given point within a circle a chord such that it is bisected at the point. 13
8. The locus of a point at which a given straight line subtends a constant angle is an arc of a circle. 13

PLANE GEOMETRY.

Marks.

(Time, 3 hours.)

- | | |
|---|----|
| 9. Given one angle, and the opposite side, and the sum of the other sides, construct the triangle. | 14 |
| 10. The locus of a point, the ratio of whose distances from two given points is constant, is a circle. | 14 |
| 11. Similar triangles are to one another in the ratio duplicate of the ratio of two corresponding sides. | 14 |
| 12. Construct a square equal to the difference of two given squares. | 14 |
| 13. The rectangle contained by the diagonals of a quadrilateral inscribed in a circle is equal to the sum of the rectangles contained by pairs of opposite sides. | 14 |
| 14. The chords of two intersecting circles which are bisected at any point of the common chord are equal. | 15 |
| 15. Prove that the bisectors of all the angles of any regular polygon meet in a point | 15 |

PLANE TRIGONOMETRY.

Marks.

(Time, 3 hours.)

- | | |
|---|----|
| 1. Prove that $\sin^6 \theta + \cos^6 \theta = 1 - 3 \cos^2 \theta + 3 \cos^4 \theta$. | 12 |
| 2. Prove that $\frac{\tan A + \tan B}{\cot A + \cot B} = \tan A \tan B$. | 12 |
| 3. Show that $\sin 18^\circ = \frac{\sqrt{5}-1}{4}$ | 12 |
| 4. Prove $\cos 4A = 8 \cos^4 A - 8 \cos^2 A + 1$. | 12 |
| 5. Deduce $\tan A + \tan B + \tan C = \tan A \tan B \tan C$. | 13 |
| 6. If a, b, c , be the sides of a triangle and s = the half sum, show that the area = $\sqrt{s(s-a)(s-b)(s-c)}$ | 13 |
| 7. The sides of a triangle are 6, 8, and 10 ; what are the angles ? | 13 |
| 8. If $a=13, b=14, C=72^\circ$, find the other parts. | 13 |

SESSIONAL PAPER No. 25a

SPHERICAL TRIGONOMETRY.

Marks.

(Time, 3 hours.)

- | | |
|---|----|
| 1. Deduce $\cos A = -\cos B \cos C + \sin B \sin C \cos a$. | 16 |
| 2. Deduce $\sin^2 \frac{1}{2} A = \frac{\sin(s-b) \sin(s-c)}{\sin b \sin c}$ | 16 |
| 3. Deduce $\frac{\sin \frac{1}{2} (A + B)}{\sin \frac{1}{2} (A - B)} = \frac{\tan \frac{1}{2} c}{\tan \frac{1}{2} (a - b)}$ | 17 |
| 4. In a spherical right triangle: $c = 101^\circ 16' 16''$, $b = 115^\circ 42' 38''$; find A . | 17 |
| 5. In a spherical triangle: $b = 99^\circ 40'$, $c = 100^\circ 49'$, $A = 65^\circ 33'$; find a . | 17 |
| 6. Given $A = 135^\circ 05'$, $C = 50^\circ 30'$, $b = 69^\circ 35'$; find B . | 17 |

MENSURATION OF SUPERFICIES.

Marks.

(Time, 3 hours.)

- | | |
|--|----|
| 1. What part of the surface of the earth lies between the parallels of 30° and 60° , both north latitude? | 14 |
| 2. The sides of a field are 10·24, 12·18 and 14·62 chains respectively. What is its area? | 14 |
| 3. What is the surface of a circular tent, 10 feet in diameter, having a vertical wall of 3 ft., and centre pole 11 ft.? | 14 |
| 4. A right cone with radius of base r , altitude p , is cut by a plane parallel to the base so that the surfaces of the two parts are as 1 to 3. What is the height of the truncated cone? | 14 |
| 5. The area of a field is given at 100 acres, but it was found that the chain used in survey was a link too long. What is the true area of the field? | 14 |
| 6. What is the surface of a regular tetrahedron whose edge is $2a$? | 15 |
| 7. What is the radius of the earth, expressed in terms of a of question 6, when the zone of the tropics ($23^\circ 30'$ north and south of the equator) is equal to the surface of the above tetrahedron? | 15 |

EXAMINATION FOR ADMISSION AS ARTICLED PUPIL.

XXVI.

(Time, 3 hours.)

PENMANSHIP AND ORTHOGRAPHY.

Write a composition of not less than 200 words on : "Why young men should write legibly and correctly."

ARITHMETIC AND LOGARITHMS.

Marks.

(Time, 3 hours.)

1. Multiply $\cdot 13578$ by $\cdot 048753$.
Divide $1\cdot 0486$ by $\cdot 79421$.

12
2. Prove rule for converting a recurring decimal to a vulgar fraction.

12
3. Compound interest reckoned quarterly at 2 per cent is equal to what interest reckoned yearly ?

12
4. If the difference between the simple and compound interest on a sum of money for two years at 5 per cent be \$3, find the sum ?

12
5. Given $\log 2 = \cdot 3010300$, $\log 3 = \cdot 47711213$, find $\log 46\cdot 08$.

13
6. What power of $\cdot 02837$ is $1\cdot 05$?
Find value of $(\cdot 00789)^{\frac{1}{2}}$.

13
7. Find numerical value of $\text{Sin } A + \text{Tan } B + \text{Sec } C$, when $A = 57^{\circ} 18' 15''$,
 $B = 60^{\circ} 29' 35''$, $C = 62^{\circ} 12' 10''$.

13
8. The logarithmic Sine of an angle is $9\cdot 7854321n$.
" " Tangent " $10\cdot 2356781$.
" " Secant " $12\cdot 0567429n$.
Find the angles.

13

ALGEBRA.

Marks.

(Time, 3 hours.)

1. Expand $(x \pm y \pm z)^5$ and $(x \pm y)^{10}$

10
2. Find the L. C. M. of $x^2 + 5x + 10$, $x^3 - 19x - 30$, $x^3 - 15x - 50$.

10
3. Simplify $\frac{(x + y)^7 - x^7 - y^7}{(x + y)^5 - x^5 - y^5}$

10
4. The product of four consecutive numbers is 93024. Find them.

10
5. $x^2 - 7x + \sqrt{x^2 - 7x + 18} = 24$; find x .

10
6. Solve the equation $(x - 2a)^3 + (x - 2b)^3 = 2(x - a - b)^3$

10
7. Solve $x + y + z = a + b + c$, $x + a = y + b = z + c$.

10
8. A crew which can pull at the rate of nine miles an hour finds that it takes twice as long to come up a river as to go down; at what number of miles does the river flow ?

10
9. Show that the G. C. M. of two quantities is the L. C. M. of their common measures.

10
10. If $2s = a + b + c$, show that
$$\frac{1}{s - a} + \frac{1}{s - b} + \frac{1}{s - c} - \frac{1}{s} = \frac{abc}{s(s - a)(s - b)(s - c)}$$

10

PLANE GEOMETRY.

Marks.

(Time, 3 hours.)

1. Through a given point in the base of an isosceles triangle, draw a straight line which shall be terminated by the sides of the triangle (produced if necessary) and shall be bisected by the base. 12
2. If two circles touch one another externally, the straight line which joins their centres shall pass through the point of contact. 12
3. Find a fourth proportional to three given straight lines. 12
4. Similar triangles are to one another as the squares of their homologous sides. 12
5. Prove geometrically $(a + x)^2 + (a - x)^2 = 2(a^2 + x^2)$. 13
6. If A be a point outside a circle and B be the middle point of the chord of contact of tangents drawn from A, and P and Q be any two points on the circle, then PA is to QA as PB to QB. 13
7. To construct a triangle having each of two angles double of the third angle. 13
8. In a given circle to inscribe a triangle similar to a given triangle. 13

PLANE GEOMETRY.—*Continued*Marks.

(Time, 3 hours.)

9. Bisect a parallelogram by a straight line drawn through a given point within it. 14
10. The sum of the squares on the sides of a parallelogram is equal to the sum of the squares on the diagonals. 14
11. Every parallelogram inscribed in a circle is a rectangle. 14
12. To inscribe a regular polygon of fifteen sides in a given circle. 14
13. To divide a given straight line in extreme and mean ratio. 14
14. Prove that the difference of the squares on a diagonal and on a side of a regular pentagon is equal to the rectangle contained by them. 15
15. Construct a triangle having given an angle and the radii of the inscribed and the circumscribed circles. 15

PLANE TRIGONOMETRY.

Marks.

(Time, 3 hours.)

1. Prove $\sin 3A + \sin 5A = 2 \sin 4A \cos A$. 12
2. Prove $\frac{\tan \theta \cdot \cot \varphi + 1}{\tan \theta \cdot \cot \varphi - 1} = \frac{\sin (\theta + \varphi)}{\sin (\theta - \varphi)}$ 12
3. Show that $\sin 18^\circ = \frac{\sqrt{5} - 1}{4}$ and $\cos 54^\circ = \frac{1}{4} \sqrt{10 - 2\sqrt{5}}$. 12
4. Show that $\sin \frac{1}{2} A = \sqrt{\frac{(s-b)(s-c)}{bc}}$ 12
5. The sides of a triangle are 13, 12, 5 ; find the angles. 13
6. Two sides of a triangle are 14 and 16 and the included angle $40^\circ 15'$; find the other side. 13
7. The sides of a triangle are 22, 25, 29 ; find the angles. 13
8. Find the circular measure of 42° , and find the angle whose circular measure is $\frac{5}{8}$. 13

SPHERICAL TRIGONOMETRY.

Marks.

(Time, 3 hours.)

1. Show that $\cos A + \cos B \cos C = \cos a \sin B \sin C$. 14
2. Show that $\cos a \sin b = \sin a \cos b \cos C + \sin c \cos A$. 14
3. Deduce $\sin \frac{1}{2} A = \sqrt{\frac{\sin (s-b) \sin (s-c)}{\sin b \sin c}}$. 14
4. Given $a = 32^\circ 15'$, $b = 48^\circ 12'$, $c = 72^\circ 16'$; find A . 14
5. Given $a = 32^\circ 15'$, $b = 48^\circ 12'$, $C = 72^\circ 16'$; find c . 14
6. Give and prove Napier's rules for the solution of right angled spherical triangles. 15
7. Given $C = 90^\circ$, $c = 44^\circ 35'$, $a = 1^\circ 12'$; find A and B . 15

SESSIONAL PAPER No. 25a

MENSURATION OF SUPERFICIES.

Marks.

(Time, 3 hours.)

- | | |
|--|----|
| 1. What is the area of a triangular field whose sides are 12·16, 14·72 and 16·12 chains ? | 12 |
| 2. The sides of a quadrilateral inscribed in a circle are respectively 14, 15, 16 and 17 chains, what is the area ? | 12 |
| 3. What is the ratio of the temperate zones to the torrid zone of the earth ? | 12 |
| 4. Taking the distance of the moon at 240,000 miles and the radius of the earth 4,000 miles, what proportion of the surface of the earth is visible from the moon ? | 12 |
| 5. If a tetrahedron with edge a , be converted into a sphere, what is the radius of the latter ? | 13 |
| 6. A right cone whose diameter and height are equal contains 100 cubic inches, what is its surface ? | 13 |
| 7. A mountain area of 10,000 square miles has an annual precipitation of 40 inches, of which 35 per cent is lost in evaporation. The water is stored in reservoirs. What area can be irrigated with 20 inches of water from the reservoirs ? | 13 |
| 8. The surface of a sphere is equal to that of a cylinder whose height is three times its diameter. If r is the radius of the sphere what are the dimensions of the cylinder ? | 13 |

EXAMINATION FOR ADMISSION AS ARTICLED PUPIL.

XII.

LIMITED EXAMINATION.

Marks.

(Time, 3 hours.)

- | | |
|---|---|
| 1. Write a composition of not less than 200 words on the "River Systems of Canada." | |
| 2. When will a sum of money treble itself at three per cent compound interest ? | 8 |
| 3. Find the value of $8\cdot762 + 15\cdot549 + 13\cdot204$. | 9 |
| 4. Which of the following statements is more nearly correct ? $\frac{10}{9\cdot009} = 1\cdot11$ or $\frac{10}{1\cdot11} = 9\cdot009$ | 9 |
| 5. Given the logarithms of $2 = \cdot3010300$ and of $3 = \cdot4771213$; find the logarithm of $\sqrt{45}$; of 36 ; and of $\cdot001$ | 9 |
| 6. Find value of $(1\cdot17)^7 (\cdot0082)^{\frac{1}{2}} (\cdot178)^{\frac{2}{3}}$ | 9 |
| 7. Solve $x^2 - 5x + \sqrt{x^2 - 5x + 3} = 9$ | |
| 8. Prove geometrically $(a - b) (a + b) + b^2 = a^2$ | 9 |
| 9. Draw a tangent to a given circle parallel to a given straight line. | 9 |
| 10. Construct a right-angled triangle having given the hypotenuse and the difference of the sides. | 9 |

LIMITED EXAMINATION.

Marks.

(Time, 3 hours.)

- | | |
|--|----|
| 11. If $\tan A = \frac{1}{2}$ and $\tan B = \frac{1}{3}$, prove that $\tan (A + B) = \frac{2}{5}$, and $\tan (A - B) = \frac{1}{7}$. | 12 |
| 12. Prove $\cot \left(A - \frac{\pi}{4} \right) + \tan \left(A + \frac{\pi}{4} \right) = 0$. | 12 |
| 13. In a plane triangle $a = 12$, $b = 14$, $c = 16$; find the angles. | 12 |
| 14. In a spherical triangle $a = 52^\circ 16'$, $b = 70^\circ 34'$, $C = 46^\circ 19'$; find the other parts. | 12 |
| 15. In a spherical triangle $A = 100^\circ$, $C = 90^\circ$, $a = 112^\circ$; solve the triangle. | 13 |
| 16. What is the surface of a tetrahedron whose volume is equal to that of a sphere of radius r ? | 13 |
| 17. A right cone, whose diameter of base equals its altitude, weighs 10 pounds. The specific gravity of the mass is 12. What are the dimensions of the cone? | 13 |
| 18. Give formulæ for surface and volume of sphere, cone, truncated pyramid and segment of sphere. | 13 |

PRELIMINARY (LIMITED) EXAMINATION

XIII.

FIRST PAPER.

Marks.

(Time, 3 hours.)

- | | |
|--|---|
| 1. Write a composition of not less than 200 words : "Canada, a nation." | |
| 2. Show that 72 divided by any rate of interest gives approximately the number of years in which a sum of money will double itself at that rate of interest. | 8 |
| 3. Give and prove the rule for converting a recurring decimal to a vulgar fraction. | 8 |
| 4. Find numerical value of $\sqrt[3]{34} \cdot (5.72)^{\frac{1}{2}} \cdot (.081)^7 (3.04)^{-3} \div (.061)^{\frac{1}{4}} (1.72)^5$ | 8 |
| 5. If the unit of measure be 7 inches, what is the measure of $\frac{8}{361}$ of a mile? | 8 |
| 6. Solve $x^4 + x^3 - 4x^2 + x + 1 = 0$. | 8 |
| 7. Solve the equation $8^{5-3x} = 12^{4-2x}$ having given $\log 2 = .301030$, $\log 3 = .477121$. | 8 |
| 8. Prove geometrically $(a - b)^2 + 4ab = (a + b)^2$ | 8 |
| 9. The sides of a triangle are 10, 12, 15 : prove that it is acute-angled. | 8 |

SESSIONAL PAPER No. 25a

SECOND PAPER.

| | Marks. |
|--|--------|
| <i>(Time, 3 hours.)</i> | |
| 10. Prove $\frac{\sin A + \cos A}{\cos A - \sin A} = \tan 2A + \sec 2A$. | 11 |
| 11. Prove $\cot \frac{\pi}{8} - \tan \frac{\pi}{8} = 2$. | 11 |
| 12. Solve $\cos A + \cos 3A + \cos 5A = 0$. | 11 |
| 13. Show that $\sin A = \frac{2}{bc} \sqrt{s(s-a)(s-b)(s-c)}$. | 11 |
| 14. In a plane triangle two sides and the included angle are given ; give formulæ for solving triangle completely. | 11 |
| 15. In a spherical triangle show that $\cos a \sin b = \sin a \cos b \cos C + \sin c \cos A$. | 11 |
| 16. Solve triangle, when $c = 140^\circ$, $a = 20^\circ$, $C = 90^\circ$. | 11 |
| 17. Given $b = 120^\circ 30' 30''$, $c = 70^\circ 20' 20''$, $A = 50^\circ 10' 10''$, find a and B . | 12 |
| 18. Write down Napier's analogies. | 11 |

EXAMINATION FOR ADMISSION AS SURVEYOR

XXXIII.

PLANE GEOMETRY.

| | Marks. |
|--|--------|
| <i>(Time, 3 hours.)</i> | |
| 1. Construct a triangle of given perimeter, having its angles equal to those of a given triangle. | 16 |
| 2. Prove geometrically $(a+b)^2 + (a-b)^2 = 2(a^2 + b^2)$ | 16 |
| 3. Inscribe a circle in a given triangle. | 16 |
| 4. Describe three circles to have their centres at three given points, and to touch each other in pairs. | 17 |
| 5. Find the locus of the centre of a circle whose circumference passes through two given points. | 17 |
| 6. If a straight line cut two sides of a triangle proportionately, it is parallel to the third side. | 17 |
| 7. Describe three equal circles to touch each other and a given circle. | 17 |
| 8. Divide a straight line in extreme and mean ratio. | 17 |
| 9. Two diagonals of a regular pentagon which meet within the figure divide each other in extreme and mean ratio. | 17 |

SOLID GEOMETRY.

Marks.

(Time, 3 hours.)

1. Define Solid, Inclination of a plane to a plane, Pyramid, Frustrum of a cone, Similar solid figures, Tetrahedron, Parallelopiped, Icosahedron. 9
2. If two planes meet in a point, they meet in a straight line. 9
3. Every point, which is equidistant from two fixed points, lies in a fixed plane. 9
4. If three planes intersect each other in pairs, their common sections either meet in a point or are parallel in pairs. 9
5. A tetrahedron is of equal volume as a sphere of radius r . What is the side of the former? 9
6. What portion of the surface of the earth is included between latitude 60° north, and 30° south? 10
7. A metallic globe of radius r is converted into a right cone, the diameter of the base being equal to the altitude. What are the dimensions of the cone? 10
8. A truncated pyramid, with square base, has the following dimensions, upper surface 16 sq. inches, lower surface or base 36 sq. inches, height 10 inches. What is the volume?

SPHERICAL TRIGONOMETRY.

Marks.

(Time, 3 hours.)

1. Show that $\cos A = -\cos B \cos C + \sin B \sin C \cos a$. 17
2. Show that $\tan^2 \frac{1}{2} a = \frac{-\cos S \cos (S - A)}{\cos (S - B) \cos (S - C)}$ 18
3. Prove Napier's rules for the solution of right-angled triangles. 18
4. Deduce $\frac{\sin \frac{1}{2} (a + b)}{\sin \frac{1}{2} (a - b)} = \frac{\cot \frac{1}{2} C}{\tan \frac{1}{2} (A - B)}$ 18
5. Given $c = 140^\circ$, $a = 20^\circ$, $C = 90^\circ$; solve triangle. 18
6. Given $b = 120^\circ 30' 30''$, $c = 70^\circ 20' 20''$, $A = 50^\circ 10' 10''$; find a and B . 18
7. Given $A = 135^\circ 05' 29''$, $C = 50^\circ 30' 08''$, $b = 69^\circ 34' 56''$; find a and B . 18

MEASUREMENT OR AREAS AND SUBDIVISION OF LAND.

Marks.

(Time, 3 hours.)

1. Divide a triangle into two parts in the ratio $a : b$, by a line starting from a given point in one of the sides.

16
2. In a triangle of sides a, b, c , what is the length of the line parallel to the side b , that cuts off a triangle the m^{th} of the whole area ?

16
3. In a circular area of ten acres, what is the length of the equal parallel chords within which one-half of the area lies ?

17
4. In a given triangle show how to part off a given area by a straight line passing through a given point within the triangle.

17
5. In a quadrilateral $ABCD$, the sides are respectively $AB=8, BC=12, CD=14, DA=6$, the diagonal $DB=10$ chains. Required to divide it into three equal parts by two straight lines drawn from A .

17
6. A field is supposed to contain 17.86 acres, but it was found that the chain used in the survey was three inches too short. What is the correct area?

17

MEASUREMENT OF AREAS AND SUBDIVISION OF LAND.

Marks.

(Time, 3 hours.)

7. The following are the notes of a survey of a quadrilateral piece of land:—

| Station. | Bearing. | Distance. |
|----------|------------------------|---------------|
| 1 | N. 52° E. | 10.63 chains. |
| 2 | S. $29^{\circ} 45'$ E. | 4.10 “ |
| 3 | S. $31^{\circ} 45'$ W. | 7.69 “ |
| 4 | N. $61^{\circ} 00'$ W. | 7.13 “ |

Find the area by the method of Latitudes and Departures, first “balancing” the courses.

25

8. Express the conditions necessary for a closed survey by two equations :—
(a) And from them show what missing data in a survey can be supplied.
(b) How does the supplying of missing data in a survey affect “balancing” the survey ?

25
9. The centre line of a railway leaves a tangent running N. 60° E. at a lot line running due north and continues on a curve of 1,000 feet radius across the lot which is 20 chains wide. The right of way extends 50 feet on each side of the centre line. What is the area of the right of way across the lot ?

25
10. If the discharge of a river system is 10,000 cubic yards per minute, the annual precipitation 35 inches, whereof 40 per cent is lost in evaporation, what must be the area of the catchment basin ?

25

DESCRIPTIONS.

Marks.

(Time, 3 hours.)

1. A man sells the south-east quarter of Section 4, Township 5, Range 7, west of 3rd Initial Meridian.
Make a description of the part sold for insertion in a deed. 20
2. If in the preceding example the man had sold 160 acres in the form of an equilateral quadrilateral adjoining the eastern and southern section lines, how should the necessary description for conveyance be made? 20
3. Through the above section a railway runs on a tangent, and for which lands 50 feet on each side of the centre line have been appropriated. The centre line cuts the northern limit of the section 15 chains, and the western limit 20 chains from the northwest corner of the section. Make a description for a deed of the whole of the section exclusive of railway right of way.
4. Off the southeast corner and adjoining its bounding limits of the section given in the above No. 1, a parcel is sold in the form of an equilateral quadrilateral and having a frontage of 200 feet along the southern limit. Make a description for a deed. 20
5. Draw up an assumed evidence regarding the position of a lost corner post which it is desired to re-establish. 20

ASTRONOMY.

Marks.

(Time, 3 hours.)

1. Define declination, right ascension, celestial latitude and longitude; solar, mean and sidereal time; parallax and azimuth. 14
2. Explain fully the equation of time and its variation.
A graphical representation may be given. 14
3. What is the azimuth of Polaris in latitude $49^{\circ} 50'$ N., longitude 105° W. on June 16, 1904, 3 hours (mean time) after upper transit? 14
4. In question No. 3 what is the apparent altitude of Polaris at upper transit? 14
5. In question No. 3 what is the azimuth of Polaris at eastern elongation? 14
6. What is the latitude of the place, when on June 16, 1904, the altitude of Arcturus was $70^{\circ} 15'$ on the prime vertical? 15
7. On June 16, 1904, what are the limiting values that Polaris can have at elongation on the earth? 15

SESSIONAL PAPER No. 25a

ASTRONOMY.

(Time, 3 hours.)

Marks.

8. The longitude of a place is $114^{\circ} 15' 18''$ W. Express this in time and state whether the time is solar, mean or sidereal time. Give also the time that a Greenwich Mean Time clock should show on June 16, 1904, at apparent noon at the above longitude. 20
9. In latitude $50^{\circ} 18'$ N., longitude $114^{\circ} 15' 18''$ W., the sun's apparent altitude of the upper limb was $42^{\circ} 17'$ at $9^h 42^m 19^s$ on June 16, 1904. What was the azimuth, and what the watch error? 20
10. At mean noon on June 16, 1904, latitude $50^{\circ} 18'$ N., longitude $114^{\circ} 15' 18''$ W., a sidereal chronometer is fast $4^m 17^s$ on local sidereal time, and loses $13.5^{\text{sec.}}$ per day. On the same day, what will this chronometer show when the local mean time at a place in longitude $107^{\circ} 18' 52''$ is $4^h 17^m 48^s$ P.M.? 20
11. At the same place and date as No. 9, at what time will Sirius rise, and what is the standard time of its passing the meridian? 20
12. Give all the necessary formulæ for obtaining the latitude of a place from two altitudes of a star, and the difference of time between the observations. 20

ALGEBRA.

(Time, 3 hours.)

Marks.

1. Find the value of $\frac{1}{x-a} + \frac{1}{x-b}$ when $x = \frac{2ab}{a+b}$ 16
2. Reduce to lowest terms $\frac{x^6 - a^6}{x^4 - a^4} \cdot \frac{(a^2 - bc)^2 - (b^2 - ac)(c^2 - ab)}{(b^2 - ca)^2 - (c^2 - ab)(a^2 - bc)}$
and $\frac{x^3 + y^3 + z(z^2 - 3xy)}{x^2 - y^2 + z(z + 2x)}$. 16
3. Solve the equation $\frac{a^2 - b^2}{x - c} + \frac{b^2 - c^2}{x - a} + \frac{c^2 - a^2}{x - b} = 0$. 17
4. Solve $\sqrt[3]{1 - 2x} + \sqrt[3]{1 + 2x} = \sqrt[3]{4}$. 17
5. The sum of the squares of two numbers is a number whose three digits are consecutive numbers, in the hundreds, tens and unit places respectively. The sum of the digits is equal to half the sum of the numbers. Find the number. 17
6. Find the H. C. F. of $4x^4 + 2x^3 - 18x^2 + 3x - 5$
and $6x^5 - 4x^4 - 11x^3 - 3x^2 - 3x - 1$
and the L. C. M. of $x^4 + 4x^2 + 16$, $x^5 + 2x^4 + 4x^3 + 8x^2 + 16x + 32$
and $x^5 - 2x^4 + 4x^3 - 8x^2 + 16x - 32$. 17

XXXIV.

PLANE GEOMETRY.

(Time, 3 hours.)

| | Marks. |
|---|--------|
| 1. Prove geometrically $a(a-x) = x^2$ | 16 |
| 2. Describe a circle about a given triangle. | 16 |
| 3. Describe a circle passing through a given point and touching a given circle at a given point. | 16 |
| 4. If ABC be a triangle inscribed in a circle and the angle BAC be bisected by AD, which meets the circle in D, then the diameter through D will bisect BC at right angles. | 17 |
| 5. The rectangle contained by the diagonals of a convex quadrilateral inscribed in a circle is equal to the sum of the rectangles contained by pairs of the opposite sides. | 17 |
| 6. Inscribe a regular pentagon in a given circle. | 17 |
| 7. Prove that the difference of the squares on a diagonal and on a side of a regular pentagon is equal to the rectangle contained by them. | 17 |
| 8. If two triangles be equiangular to one another, they are similar. | 17 |
| 9. The locus of a point, the ratio of whose distances from two given points is constant, is a circle. | 17 |

SOLID GEOMETRY.

(Time, 3 hours.)

| | Marks |
|---|-------|
| 1. Name and describe all the regular solids. | 8 |
| 2. Define solid or polyhedral angle, frustum of a cone, parallelepiped, and pyramid. | 8 |
| 3. Show how to draw through a given point a straight line to intersect two non-intersecting straight lines. | 8 |
| 4. If two straight lines be parallel, any plane through one of them is parallel to the other. | 8 |
| 5. A metallic tetrahedron, edge 10 inches, is melted. What is the radius of the sphere that will just be covered with the metal one-tenth of an inch thick? | 8 |
| 6. Taking the radius of the earth as 4,000 miles, what part of its surface is visible at a distance of 100,000 miles from the centre? | 8 |
| 7. Supposing the air to extend to a height of 100 miles above the surface. What is the ratio of the volume of the air to the earth? | 9 |
| 8. What is the whole surface of a right cone, radius of base r and height h ? | 9 |
| 9. In question 8, what is the radius of the sphere of same volume as the cone? | 9 |

SPHERICAL TRIGONOMETRY.

(Time, 3 hours.)

| | Marks |
|--|-------|
| 1. Show that $\cos a \sin b = \sin a \cos b \cos C + \sin c \cos A$. | 17 |
| 2. Show that $\cos \frac{1}{2}A = \frac{\sin S \sin (S - a)}{\sin b \sin c}$. | 18 |
| 3. Show that $\cos \frac{1}{2}c \sin \frac{1}{2}(A + B) = \cos \frac{1}{2}C \cos \frac{1}{2}(a - b)$. | |
| 4. Write down Napier's analogies. | 18 |
| 5. Given $c = 140^\circ$, $a = 20^\circ$, $C = 90^\circ$; solve triangle. | 18 |
| 6. Given $b = 120^\circ 30' 30''$, $c = 70^\circ 20' 20''$, $A = 50^\circ 10' 10''$; find a and B . | 18 |
| 7. Given $A = 135^\circ 05' 29''$, $C = 50^\circ 30' 08''$, $b = 69^\circ 34' 56''$; find a and B . | 18 |

MEASUREMENT OF AREAS AND SUB-DIVISION OF LAND.

(Time, 3 hours.)

| | Marks |
|--|-------|
| 1. Divide a triangle into two parts in the ratio $a : b$, by a straight line passing through a given point within the triangle. | 16 |
| 2. The sides of a quadrilateral inscribed in a circle are respectively 10, 12, 14, 16 feet, what is its area? | 16 |
| 3. What is the area of a circular half-mile race-course, 40 feet wide, and where the half-mile line is three feet from the inner side of the track? | 17 |
| 4. If in question 3 the temperature of the steel band, standard at 62° F., was 84° F., when laying out the track and no correction was applied, what is the true area of the track, assuming the co-efficient of expansion to be .0000065 per degree Fahrenheit? | 17 |
| 5. If a river discharges 1,000 cubic yards of water per minute, what area could be irrigated, allowing 15 inches of water for the surface during the year? | 17 |
| 6. The three sides being given, to divide the triangle into three equal parts by lines running from a given point in one of the sides. | 17 |
| 7. The notes of a survey of a piece of land are as follows :— | |
| 1. N. 58° E. 12.97 chains. | |
| 2. S. $27^\circ 45'$ E. 3.30 " | |
| 3. S. $85^\circ 15'$ E. 11.65 " | |
| 4. S. 19° E. 15.56 " | |
| 5. S. $66^\circ 30'$ W. 14.03 " | |
| 6. N. 64° W. 14.86 " | |
| 7. N. $15^\circ 30'$ W. 11.23 " | |
| Required the area. | 40 |

MEASUREMENT OF AREAS AND SUBDIVISION OF LAND—*Con.**(Time, 3 hours.)*

Marks

8. Express the conditions necessary for a closed survey by two equations :

(a.) And from them show what missing data in a survey can be supplied.

(b.) How does the supplying of missing data in a survey affect "balancing" survey ?

20

9. A quadrilateral is bounded by two parallel sides, by a straight line at right angles thereto, and by the right of way of a railway. The centre line of the latter is the arc of a circle of 1000 feet radius and intersects the parallel sides at 10 and 15 chains respectively from the nearest point of the remaining side, which is 20 chains long. The right of way lies 50 feet on each side of the centre line. What is the area of the quadrilateral ?

20

ASTRONOMY.

(Time, 3 hours.)

Marks

1. Define declination, right ascension, vernal equinox, refraction, parallax, azimuth and prime vertical.

14

2. Define mean, solar, and sidereal time. What is the equation of time ? What causes it to vary ? Why is its greatest value in November ?

14

3. The difference in longitude between two places is $114^{\circ} 17' 28''$; convert this into time. What "kind" of time is the result ? What would be the difference in sidereal time at mean noon respectively at the two places ?

14

4. On March 31, 1904, the apparent meridian altitude of the sun's lower limb was $46^{\circ} 10' 30''$. The longitude of the place was $82^{\circ} 40' W.$; required the latitude.

14

5. On March 31, 1904, in latitude $45^{\circ} 25' N.$, longitude $75^{\circ} 42' W.$, what is the azimuth of Sirius at rising ?

14

6. In question 5, same date and place, what is the standard time of Sirius crossing the meridian ?

15

7. At the same place and date as in question 5, a standard sidereal clock showed $5^h 17^m 18^s$, what is the longitude of the place that at the same instant showed the same time on a mean time clock ?

15

SESSIONAL PAPER No. 25a

ASTRONOMY.

(Time, 3 hours.)

| | Marks |
|---|-------|
| 8. On March 31, 1904, in latitude $45^{\circ} 25' N.$, longitude $75^{\circ} 42' W.$, the altitude of the sun's lower limb was $27^{\circ} 38'$ at $9^h 15^m 17^s$; what was the watch error, and what the azimuth of the sun? | 20 |
| 9. At mean noon on above date and place a sidereal chronometer is fast $4^m 17^s.5$ on local sidereal time and loses $3^s.5$ a day. What will this chronometer show on April 10, 1904, when a mean time chronometer in longitude $102^{\circ} W.$ shows $5^h 17^m 38^s$ P.M.? | 20 |
| 10. Show how the latitude of a place may be obtained by observing two altitudes of a star and the difference of time between the observations. | 20 |
| 11. On same date and place as question 8, what is the standard time of western elongation of Polaris? | 20 |
| 12. On same date as above what is the latitude of the place that gives three hours as the hour angle of a Aurigae (Capella) when on the prime vertical? | 20 |

EXAMINATION FOR DOMINION TOPOGRAPHICAL SURVEYOR.

VIII.

ALGEBRA.

(Time, 3 hours.)

| | Marks |
|--|-------|
| 1. Solve $3^x + 1 + 9^x = 810$. | 6 |
| 2. If p be greater than unity, then for all real values of x the expression $\frac{x^2 - 2x + p^2}{x^2 + 2x + p^2}$ lies between $\frac{p-1}{p+1}$ and $\frac{p+1}{p-1}$ | 6 |
| 3. If x, y, z , be variable quantities such that $y + z - x$ is constant, and that $(x + y - z)(x + z - y)$ varies as yz , prove that $x + y + z$ varies as yz . | 6 |
| 4. Sum to n terms $1^2 + 3^2 + 5^2 + 7^2 + \dots$ | 6 |
| 5. Find the number of permutations which can be formed with the letters comprising the word <i>examination</i> taken 4 at a time. | 6 |
| 6. Sum to n terms $1 + 3 + 6 + 10 + \dots$ | 6 |
| 7. Find the $(r + 1)^{th}$ term in the expansion of $(1 - x)^n$ | 7 |
| 8. A undertakes with a pair of dice to throw 6 before B throws 7; they throw alternately, A commencing. Compare their chances. | 7 |

PLANE TRIGONOMETRY.

(Time, 3 hours.)

Marks

- | | |
|---|---|
| 1. Express the value of $\sin 18^\circ$ under a finite form. | 8 |
| 2. Show that area of a quadrilateral inscribed in a circle $= \sqrt{[(s-a)(s-b)(s-c)(s-d)]}$ where a, b, c, d , are the sides and s their half sum. | 8 |
| 3. Express $(2 \cos \theta)^n$ in terms of the cosines of the multiples of the angle. | 8 |
| 4. Find the sum of the series $\sin a + \sin 2a + \sin 3a + \dots \dots \dots \sin na.$ | 8 |
| 5. Prove that $\theta = \tan \theta - \frac{1}{3} \tan^3 \theta + \frac{1}{5} \tan^5 \theta - \dots \dots$ where θ lies between $-\frac{1}{2} \pi$ and $+\frac{1}{2} \pi$ | 9 |
| 6. In a triangle A and c are constant, the rest of the parts variable, determine the relations between the increments of the variable parts. | 9 |

SPHERICAL TRIGONOMETRY.

(Time, 3 hours.)

Marks

- | | |
|---|---|
| 1. Transform for calculation by logarithms the formula : $\cos A = \frac{\cos a - \cos b \cos c}{\sin b \sin c}$ | 8 |
| 2. Find the radius of the circle inscribed in a given spherical triangle. | 8 |
| 3. Given two sides and the angle opposite one of them, find the third side. | 8 |
| 4. What are the differential variations in a spherical oblique triangle when a side, c , and the adjacent angle, A , are constant ? | 9 |
| 5. In a spherical right triangle (the right angle being C) given A and c , find b by means of a series, A being very small. | 8 |
| 6. If the sides of a triangle are very small compared with the radius of the sphere and a plane triangle be formed whose sides are equal to those of the spherical triangle, prove that each angle of the plane triangle is equal to the corresponding angle of the spherical triangle minus one-third of the spherical excess. (Legendre's theorem.) | 9 |

SESSIONAL PAPER No. 25a

ANALYTICAL GEOMETRY.

(Time, 3 hours.)

Marks

- | | |
|---|----|
| 1. Produce the general equation of a conic section referred to rectangular co-ordinates. | |
| 2. Determine the species of the locus $y^2 + 2xy + 3x^2 - 4x = 0$. | 10 |
| 3. Produce the polar equation of the ellipse in terms of the semi-transverse axis and eccentricity. | 10 |
| 4. Produce the general formulæ for passing from one set of rectilinear co-ordinates to another. | 10 |
| 5. What is the equation of a tangent to an ellipse referred to its axes? | 10 |
| 6. Produce the general differential formulæ for the value of radius of curvature and the co-ordinates of curvature of any plane, in terms of the co-ordinates of the given curve. | 15 |
| 7. Give the expression for the radius of curvature of the ellipse, also for the radius of curvature at the extremities of the transverse and the conjugate axes respectively. | 10 |

DIFFERENTIAL CALCULUS AND THEORY OF LIMITS.

(Time, 3 hours.)

Marks

- | | |
|---|----|
| 1. Define "Limit." What are the conditions that two varying quantities shall be equal in the limit? | 5 |
| 2. Give geometrical examples to show that two quantities each having the limit zero may not be ultimately in a ratio of equality, and that two quantities each indefinitely great in the limit may have a finite ratio to one another. | 5 |
| 3. Discuss the validity of the following reasoning from a property of rectilinear figure to one of a curvilinear figure. Since the area of a regular polygon inscribed in a circle is equal to one-half the rectangle under the perimeter of the polygon and the perpendicular from the centre of the circle upon one of the sides, therefore the area of a circle is equal to one-half the rectangle under the radius and circumference. | 10 |
| 4. From the expression for the area of a circle deduce that for the area of an ellipse, and from the expression for the volume of a sphere, deduce that for the volume of an oblate spheroid. | 8 |
| 5. Find the radius of curvature of an ellipse at any point. Express it in terms of the inclination of the normal at the point to the major axis. | 11 |
| 6. In a spherical triangle are given two sides AB, BC, and the included angle B, and it is required to determine the angle A. What is the form of the triangle in which a small error in B will have the least effect on the deduced value of A? | 8 |
| 7. If the three sides of a spherical triangle are given, what is the form of the triangle when an error in one side will produce the minimum error in (1) the angle opposite to it, (2) one of the other angles? | 16 |
| 8. Develop by Maclaurin's Theorem, each to four terms $\log \cos x, \tan x, \frac{1}{\sqrt{1-x^2}}$ | 12 |

PROJECTIONS.

(Time, 3 hours.)

| | Marks |
|--|-------|
| 1. Prove that in the stereographic projection the angle of two lines on the sphere is equal to the angle of their projections. | 12 |
| 2. Explain the construction of the gnomonic projection and its characteristics. | 12 |
| 3. Describe the various kinds of conic projections, their advantages and disadvantages. | 12 |
| 4. Find the equation of a loxodromic line on the surface of the earth. | 15 |
| 5. Give formulæ for calculating the co-ordinates of the points of intersection of meridians and parallels in the polyconic and simple conic projections. | 12 |
| 6. Give the latitudes and longitudes of two points, find by means of a graphic construction the difference between the points, assuming the earth to be spherical. | 12 |

GEODETIC SURVEYING.

(Time, 3 hours.)

| | Marks |
|--|-------|
| 1. Describe the measurement of base lines by means of steel tapes. How is the length of the tapes ascertained and what corrections have to be made to the measurements ? | 35 |
| 2. The site of a base line being crossed by a ravine, the part over the ravine is not measured. Explain the procedure in such a case and deduce the formulæ necessary for ascertaining the total length. | 30 |
| 3. The altitudes of two stations A and B are H and H' and their distance d . The highest point between A and B is at a distance c from A and its altitude is h . What must be the height of the signal at B in order that it may be visible from A ? | 35 |
| 4. Find the correction to be applied to an observed angle when the instrument is not set over the station. Also, when the signal observed is a tin cylinder upon which the sun is shining. | 30 |
| 5. Given the latitude and longitude of A, and the distance and azimuth of B from A, find the latitude and longitude of B and the azimuth of A at B. | 35 |
| 6. The latitude of station B of a triangulation and the azimuth of station A from B have been observed ; they have also been calculated from the latitude and azimuth at A and distance AB. From the difference between the observed and calculated latitude and azimuth, find the amount and direction of the deviation of the plumb line at B, assuming that no deviation exists at A. | 35 |

ASTRONOMY.

(Time, 3 hours.)

Marks

1. From the following ephemeris of the moon :—

| | | | | | |
|----------|----------------|-----------------|-----------------|---------------------|------------------|
| March 5, | 0 ^h | 21 ^h | 58 ^m | 28 ^s ·39 | Right ascension. |
| “ 5, | 12 | 22 | 27 | 15 ·43 | |
| “ 6, | 0 | 22 | 55 | 25 ·50 | |
| “ 6, | 12 | 23 | 23 | 03 ·39 | |
| “ 7, | 0 | 23 | 50 | 15 ·63 | |
| “ 7, | 12 | 0 | 17 | 09 ·83 | |

Find the moon's right ascension for March 5, 6^h.

13

2. Define mean and apparent places of a star, and state fully what constants enter in the reduction from the former to the latter.

12

3. Explain fully the equation of time. At what time of the year has it a maximum or minimum value? Why?
-
- A graphic representation may be given.

13

4. The difference, expressed in mean solar time, between Greenwich and Apsley, Ont., is 5
- ^h
- 17
- ^m
- 16
- ^s
- 84. On Feb. 1, 1905, at mean noon at Apsley the sidereal clock there showed 20
- ^h
- 41
- ^m
- 16
- ^s
- 94, when the true sidereal time at Centreville was 20
- ^h
- 28
- ^m
- 17
- ^s
- 56. What is the longitude of Centreville expressed in sidereal time?

12

5. Express the relationship that exists between the sidereal, tropical and anomalistic years.

12

6. Discuss the selection of a programme of stars for a given latitude for the determination of time by transits, in both positions of the instrument—clamps east and west, and reduction by least squares.

13

7. Contrast the method of noon-culminating stars with that of lunar distances, for longitude, in respect of the instruments employed, and of the intricacy of the calculations involved.

What other celestial signals have been proposed, and what is their disadvantage?

13

8. Given the declination of Polaris as 88° 48', what are the limits of its azimuth at elongation as seen from the earth?

12

SECOND PAPER.

(Time, 3 hours.)

| | <u>Marks</u> |
|---|--------------|
| 9. In determining the thread intervals from transits of a <i>close circumpolar</i> star, give formula for obtaining the equatorial intervals from the transits. | 10 |
| 10. Give formula for finding the azimuthal deviation from the transits of two stars, differing considerably in declination. | 10 |
| 11. Give expression for correction for inequality of pivots as deduced from the necessary level readings. | 10 |
| 12. In Talcott's method for the determination of latitude, show that when a star is observed off the line of collimation, the instrument remaining in the plane of the meridian, then the correction for zenith distance is $m = \frac{2 \sin^2 \frac{1}{2} \tau}{\sin 1''} \frac{1}{2} \sin 2 \delta$ where τ and δ are respectively the hour angle and declination of the star. | 17 |
| 13. Give formula for determining the declination of a star from its transit over the prime vertical, and discuss the effect of an error in latitude as well as one in the hour angle. | 17 |
| 14. Deduce the general formulæ for the alt-azimuth instrument. | 19 |
| 15. The corrected horizontal circle readings of two stars at eastern and western elongations respectively were $186^\circ.5673$ and $75^\circ.7289$. The declinations were $62^\circ 07' 41''.8$ and $58^\circ 51' 33''.5$. What is the latitude of the place of observation? | 13 |

METHOD OF LEAST SQUARES.

(Time, 3 hours.)

Marks

1. Upon what assumptions as to the errors of observation is the method of least squares based? Give examples of observations to which the method is applicable, and of others to which it is not. 20
2. The latitude of a place is found by one night's observations to be $50^{\circ} 27' 13''.85$ with a probable error of .103, and by another night's observations to be $50^{\circ} 27' 13''.69$ with a probable error of .127. Find the most probable value of the latitude and its probable error. 20
3. The error of a chronometer is found to be
 fast $13^s.85 \pm 6^s.25$ at $13^h 50^m$, and
 fast 14.17 ± 0.39 at $16 30$.
 What is its error at $14^h 40^m$, and what is the probable error of the result? 20
4. Observations for longitude having been made by transits of the moon, the mean of 7 transits of the preceding limb of the moon gives a result $5^h 54^m 27^s.35$, and the mean of 11 transits of the following limb, $5^h 54^m 32^s.79$. What is the most probable value of the longitude, and what is its probable error, assuming that all the observations are of equal weight, and that the probable error of a single observation is $1^s.00$. 20
5. When the observed quantities are not independent of one another, explain the method of solving by independent unknowns and by correlates. 20
6. Five points are connected by a triangulation, each point being observed upon from every other point, and all the angles read. How many conditions are there? Explain how the condition equations are formed. 20
7. The elevations of three stations B, C, and D are to be determined from a known point A. All the lines in the figure are levelled over with the following results :—

| | Observed Elevation. | Weight. |
|--------|------------------------|---------|
| A to B | + 17.40 | 1 |
| A to C | + 33.19 | 2 |
| A to D | + 30.00 | 3 |
| B to C | + 15.91 | 2 |
| B to D | + 12.62 | 3 |
| C to D | — 3.27 | 1 |

Find the most probable value of the elevations of B, C and D above A. 30

SYSTEM OF SURVEY.

(Time, 3 hours.)

| | Marks |
|---|-------|
| 1. Show that $\log (R \sin 1'') = \log a - \log \sin 1'' - M \left(n + \frac{3n^2}{2} \right) - 3M \left(n \cos 2\varphi - \frac{n^2}{2} \cos 4\varphi \right) + \dots$ in which R = radius of curvature, a and b = semi-major and semi-minor axes, $n = \frac{a-b}{a+b}$ = latitude, and M = the modulus of the common system of logarithms. | 22 |
| 2. Give the expression for the difference between the chord and the arc (parallel of latitude) for the southern boundary of a township. | 20 |
| 3. From the first iron bar on the 4th Base line, R. 1, W. of 4th meridian, a straight line is started with an azimuth of N. 50° W. and continued for 115 miles. What is the position of the western extremity of the line with reference to section, township and range? | 22 |
| 4. Compute the difference in latitude between the middle points of the chord and arc of a township side in latitude 49°. | 20 |
| 5. What is the theoretical width of township 29 along the Correction Line and adjoining the 5th meridian to the east? | 22 |
| 6. An exploratory survey is made between two points, several hundred miles apart, and whose geographical co-ordinates are known. The instruments used on the survey were a theodolite for obtaining the angular measures and a Lugeol micrometer for distances. Discuss the adjustment of the survey. Had a compass been used instead of the theodolite, in what would the adjustment differ? | 22 |
| 7. Show the derivation of the formula $p = P \sin (t - t') + \frac{P^2}{2} \sin 2 (t - t') \tan \delta$ in the method for obtaining time by observing a star in the vertical of Polaris. p = arc of great circle from the pole and perpendicular to above vertical. P = polar distance of Polaris. = declination of time star. $(t - t') = (a - a') - (T - T')$ in which T and T' are the chronometer times respectively of the time star and Polaris when observed, and a and a' their right ascensions. | 22 |

THEORY AND USE OF INSTRUMENTS.

(Time, 3 hours.)

Marks.

- | | |
|---|----|
| 1. What tests can be applied to an object glass ? What are the effects produced by the various imperfections ? What relation is there between the diameter and focal length of the object glass, the equivalent focal length of the eyepiece, and the brightness of the image ? | 25 |
| 2. Describe the adjustments of the micrometer microscopes of a graduated circle. | 25 |
| 3. Explain the adjustments of the sextant : adjustment of the index glass, the horizon glass and the telescope, determination of index correction and testing of coloured glasses. | 25 |
| 4. Find the formula for stadia measurements when the telescope used is not provided with an anallatic lens. | 25 |
| 5. Determination of the equatorial thread intervals of an astronomical transit. Reduction to mean thread. | 25 |
| 6. Measurement of atmospheric pressure with a portable mercurial barometer. Corrections for index error, capillarity, temperature of mercury, expansion of scale, altitude, latitude and reduction to sea level. | 25 |

MINERALOGY AND GEOLOGY.

(Time, 3 hours.)

Marks.

- | | |
|--|---|
| 1. State the difference between travertine and marble, gypsum and calcite, galena and graphite, copper pyrites and iron pyrites, gold and iron pyrites. | 8 |
| 2. Define cleavage, anticlinal, synclinal, unconformable, fault, outcrop, fold, sedimentary deposits, eruptive and metamorphic rocks, veins, lead, country or wall rock, lode and hardness. For last give scale, and example for each. | 8 |
| 3. Give a general description of the formations lying between Ottawa and Niagara Falls, and name the economic minerals in them. | 8 |
| 4. Describe the methods for the reduction of ores carrying gold. | 8 |
| 5. Describe the locations of the various coal areas, in Canada, and the formations in which they occur. | 9 |
| 6. Describe the various iron and silver ores found in Canada, where found and the methods of reduction. | 9 |

TRIGONOMETRIC LEVELLING.

(Time, 3 hours.)

Marks.

- | | |
|---|----|
| 1. Explain what is meant by the coefficient of terrestrial refraction. How may it be determined ? | 5 |
| 2. How may the altitude of one station above another be determined by observation of angular altitude ? | |
| 3. To what errors is precise spirit levelling liable, and how are they provided against ? What effect may local deflections of the plumb-line have ? | 6 |
| 4. Indicate how differences of level are determined by the mercurial barometer, and give formulæ. | 12 |
| 5. What is the effect upon the time of oscillation of a pendulum of placing weights on the pendulum rod ? What of the attraction by a fixed magnet upon another fastened to the pendulum rod ? | 10 |
| 6. How is the acceleration of gravity determined by means of the pendulum ? What errors must be provided against in the observation and how ? How are the oscillations of a pendulum during a long period counted ? | 12 |

TERRESTRIAL MAGNETISM.

(Time, 3 hours.)

Marks.

- | | |
|---|----|
| 1. Describe "Lloyd's Method" for the determination of total force. Deduce the formula for reduction of the observations. | 15 |
| 2. Explain what is meant by a magnetic pole (of the earth). Are the poles for the three magnetic elements, declination, inclination and force coincident ? Why does not the magnetic needle at any place point to the magnetic pole ? | 15 |
| 3. Describe fully the observation for dip with the Kew Dip Circle. What sources of error do the different reversals obviate ? | 15 |
| 4. Describe the magnetometer observation for horizontal force ? | 15 |
| 5. What is meant by C. G. S. and by British units ? What is the relation between them ? | 15 |

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APPENDIX No. 29 TO THE REPORT OF THE SURVEYOR GENERAL.

Descriptions of surveyed townships submitted by Dominion land surveyors during the year ending June 30, 1905.

TOWNSHIPS EAST OF THE PRINCIPAL MERIDIAN.

Range 7.

Township 9.—The soil in this township is all first class for farming purposes, it consists of a black or sandy loam with a clay subsoil. Every quarter section might be classified as first class with the exception of three or four which are broken with muskegs. The surface is mostly level or undulating, nearly all of it being covered with thick second growth poplar, willow and hazel scrub, and in places poplar bluffs. All along the west boundary is open level prairie. Whatever timber there is, is situated in the northeastern part of the township. However, timber for building purposes and wood can be had a few miles to the east. There is very little hay to be had in the township, although there is plenty of good grazing pasture, and a few hay sloughs. Hay in large quantities can be had a few miles to the west. Water of first quality can be had by digging about twelve feet deep. There are no streams or creeks in the township, but in summer the sloughs contain enough water for stock, and the wells supply enough in winter. The climate is temperate, having no summer frosts. There are no water powers, coal or lignite veins, stone quarries or minerals to be found. Enough stone can be procured, however, for building purposes. Game is plentiful a few miles east, consisting of moose, deer and black bear. Prairie chicken and partridge are found in the township. There are two schools in the township and two more within a few miles, besides post offices and small country stores. The country is well travelled, with good trails going to all parts. Ste. Anne, a village of about five or six hundred inhabitants, is situated on the Canadian Northern Railway, about six miles to the south.—*John Molloy, D.L.S., 1904.*

Range 8.

Township 9.—About one-third of this township is unfit for settlement, being a floating bog covered with bluffs of tamarac and spruce, along the north and east boundaries. The remaining part is nearly all second class land; the soil is principally a sandy loam with clay subsoil. The land is mostly covered with spruce, poplar, tamarac and second growth poplar and willows, being about equally divided throughout the township; the timber averages about eight inches in diameter. The surface is level or undulating. Hay can be had in large quantities in the hay sloughs and in marshes along the edges of muskegs. The greater part of the muskeg is almost impassable without poles to assist in getting over the open parts, when there is no sod to keep from sinking through. Brokenhead river leaves the township on the north boundary of section 36; at this place it is about twenty feet wide and eight feet deep at times, but south of this it seems to lose itself, but comes up again five or six miles to the southeast. All the water in the township is first class. Good water can be had by digging ten or twelve feet. The climate is temperate, having no summer frosts. There are no water powers, minerals, coal or lignite veins or stone quarries to be found in the township. Wood for fuel can be had in unlimited quantities, both in this township and in the townships further east. Timber for building purposes and lumber can be had

also. There is a sawmill, situated a few miles east, which saws large quantities of lumber during the winter months. The greater part of the township is very stony, but the land in the western part would be first class if it were not for this. Game consisting of moose and deer are very plentiful all through this section of country.—*John Molloy, D.L.S., 1904.*

Township 10.—The greater part of this township is unfit for settlement at all; it consists principally of a floating muskeg through which Brokenhead river, a stream about thirty feet wide and eight feet deep, passes. The greater part of the township is unfit to be travelled on, and in many places impassable without poles or timbers to keep from going through the sod. The greater part of the township is level. The south and east portions are made up of floating bog covered with bluffs of spruce and tamarac with some small willows. The tiers of sections along the north and west are mostly covered with poplar and second growth poplar and willow scrub and some jackpine. The average diameter of the timber is about eight inches. Hay can be had in large quantities when the season is dry, but at the present time, places where hay was growing are covered with from two to four feet of water. The water is all of first class quality; it can be had in large quantities on the ridges, by digging a few feet. The water in Brokenhead river is excellent. All the land adjoining the river is flooded in the spring or in a rainy summer season. The climate is temperate, having no summer frosts. There are no water powers, minerals, coal or lignite veins, and no stone quarries to be found. Enough stone for building purposes can be had along the ridges in the north and west parts of the township. Tamarac and spruce for wood, fence posts, building purposes or lumber, can be had both in this township and the ones to the south and east. Moose and deer are about the only kind of game to be found, but they are very plentiful. Post offices and a few small country stores are within a few miles, as well as schools. The part fit for settlement is well travelled, with good trails leading to the village of Ste. Anne, the city of Winnipeg and other points in the district.—*John Molloy, D.L.S., 1904.*

Range 9.

Township 1.—The soil in this township is mostly second class, being a sandy loam with a sandy clay subsoil and is well adapted for grain growing except the northern row of sections, which is nearly all a large muskeg extending across the township. The land is nearly all covered with thick second growth poplar and thick willow scrub, although there is a good supply of spruce, tamarac, jackpine and poplar, averaging 6 inches diameter, well distributed over the township. There is very little hay to be found; there are a few small hay sloughs but the supply is limited. The water is first class and can be had in good quantities by digging from 10 to 20 feet. There are no creeks or streams. There are no stone quarries or minerals in the township, but parts of the township are pretty well covered with surface stones, especially in the northeast corner. Wood can be had in large quantities both in this township and in the township adjacent. Moose, deer, prairie chicken and partridge are very plentiful. This township can only be entered from the southwest corner on account of the large muskegs to the north and east, which cannot be crossed until after they freeze.—*John Molloy, D.L.S., 1904.*

Township 2.—The soil in the township is mostly third class, consisting principally of a sandy loam averaging about three inches deep, with sand or sandy clay subsoil. The soil in the muskegs and hay sloughs is black clay. This township is not very well adapted for grain growing, on account of the soil being too light. The greater part is covered with tamarac, poplar and jackpine windfall, which will likely all be burned with the first fire. There is very little prairie; the northwestern part is mostly open muskeg; a considerable amount of tamarac, spruce and poplar, averaging about 8 inches in diameter, is still to be found well distributed, but nearly all of this has been

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killed by fires. Enough hay can be had in the small hay sloughs and in the edges of the muskegs to supply the early settlers until land could be cleared. The water is all of first class quality, and can be had at a depth of from four to twenty feet. The water in the muskegs and swamps is also first class. There are no creeks or streams to be found. Fuel can be had in large quantities all through the township, as well as in the township adjacent. There are no minerals or stone quarries to be found, although surface stone can be had for building purposes. There is a considerable amount of game to be found, moose and deer are plentiful, as well as prairie chicken and partridge. Sandilands, a station on the Canadian Northern Railway, is about twelve miles to the north, and can be easily reached. On account of the nature of the soil, and the scarcity of muskegs, trails can be easily made.—*John Molloy, D.L.S., 1904.*

Township 3.—The greater part of the soil in this township is unfit for grain growing purposes, as it is mostly of a sandy nature, the greater part being a sandy loam to a depth of 2 or 3 inches with a sand or sandy clay subsoil. The land along Rat river which enters the township on the east boundary of section 1 and leaves it at the northwest corner of section 7, is mostly a sandy loam and well adapted when cleared for grain growing. There is very little prairie to be found, nearly all of the township is covered with brush, consisting of tamarac, spruce, jackpine, poplar and thick willow, poplar and jackpine scrub, being equally distributed; the timber averaging about 8 inches diameter. Hay can be had in the small hay sloughs, in the muskegs and along the banks of the river. All the water is of first class quality both in the river and in the small creeks. Good water can be had by digging from 4 to 20 feet in almost any part of the township. There are no water powers to be found; Rat river, being the only stream of a sufficient size for such, is only from 3 to 5 feet deep and from 10 to 20 feet wide. Fuel can be had in large quantities all through the township, both dry and green; tamarac, spruce, poplar and jackpine being the principal kinds to be found. There are no stone quarries or minerals; some surface stones can be found. Moose, deer, wolves, prairie chickens and partridge are very plentiful. The Canadian Northern Railway runs through the township to the north, in which the station of Sandilands is situated, where there is a store, post office and sawmill.—*John Molloy, D.L.S., 1904.*

Township 4.—There is very little land in the south half of this township fit for farming of any kind. The soil is nearly all sand except in the swamps. The greater part of it is covered with jackpine, spruce, tamarac, poplar and scrub, the average diameter of the timber being about 8 inches, and it is equally distributed over the different sections; a great deal of the wood has been cut. The land for the most part is rolling or undulating. There is very little hay to be found, except in a few small hay sloughs; there are no large hay meadows. A few creeks containing good water pass through the township, being about 3 feet wide and 2 feet deep. The water is of first class quality and remains all through the winter. There are no water powers to be found. Wood in large quantities can be had all through this district, consisting of jackpine, tamarac, spruce and poplar. There are no coal or lignite veins, stone quarries or minerals to be found. The principal game to be found is moose, deer and prairie chickens. The main line of the Canadian Northern Railway passes through the southern half of this township, where the town of Woodridge is situated, which has four general stores, post office, school and church. Trails cross the township in all directions, going to and from Woodridge and other stations along the line of railway.—*John Molloy, D.L.S., 1904.*

Range 10.

Township 3.—The soil in this township is mostly third class, and the greater part of it is unfit for farming purposes, as it is either sand or shallow sandy loam with a sand or gravel subsoil. There are, however, a few good quarter sections along Rat

river, which crosses the township from east to west. The surface is undulating or rolling, being covered mostly with jackpine, spruce, tamarac, poplar and thick willow scrub, all being equally distributed through the township. The average diameter of the timber is about 7 inches; a good portion of the timber in this township has been cut already, and nearly all that remains has been killed by fire. There is a considerable amount of hay to be found along the banks of Rat river and small creeks, and in a few small hay sloughs which appear here and there throughout the township. All the water in the creeks and sloughs, and what can be had by digging a few feet, is of excellent quality. The water in Rat river and the creeks remains all the year, and in many places does not freeze. The land is not liable to be flooded. There are no water powers available. The climate is temperate, without any indications of summer frosts. There are no coal or lignite veins, stone quarries or minerals to be found. Wood for fuel can be had in unlimited quantity all through this section of country, both dry and green. Moose, jumping deer, wolves, prairie chickens and bush rabbits are very plentiful all through this part of the province. This township is well travelled by trails leading to Pine Valley, Badger and Woodridge. The main line of the Canadian Northern Railway passes through the township to the north, where the town of Woodridge is situated, which has a station, post office, church, school and four general stores. Large quantities of wood are shipped from here every year, giving employment to a large number of men.—*John Molloy, D.L.S., 1904.*

Township 4.—The northern part of this township is useless for farming purposes as it is all sand ridge and there is no loam or subsoil. The surface is undulating or rolling, and a good deal of it is covered with jackpine with some tamarac, spruce and poplar; the average diameter of the timber being about eight inches; it is equally distributed throughout the township. There is very little hay to be found, except in a few small sloughs. There is very little water in the northern part of this township, but what there is is of first-class quality. Good water can be had by digging from twenty to thirty feet. There are no water powers to be found. Wood for fuel can be had in unlimited quantities all through this section of country, both dry and green. The climate is temperate without any indications of summer frosts. There are no coal or lignite veins, stone quarries or mineral of any kind in this section of country. Moose, jumping deer, wolves, prairie chickens and bush rabbits are very plentiful. The township is well traversed by wood trails all leading to Woodridge, a town situated on section 10 of this township, along the line of the Canadian Northern Railway, having a station, post office, church, school and four general stores. A great deal of wood is shipped from here every year, giving employment to a large number of men.—*John Molloy, D.L.S., 1904.*

Range 11.

Township 3.—The greater part of the soil in this township is unfit for grain growing purposes, it being principally sand and light sandy loam with sandy clay subsoil; a few quarter sections in the south-western part, however, could be used for farming purposes, the soil being a black loam with clay subsoil. The greater portion of the township is covered with bush or scrub, jackpine, spruce, poplar and thick willow scrub being equally distributed over the township. The average diameter is about 6 inches. The land is either undulating or gently rolling. There is a considerable quantity of hay in sloughs equally distributed over the township, but there are no very large hay meadows to be found. There are a few small creeks which contain excellent water all the year round. The creeks are from 3 to 5 feet wide and about 3 feet deep. There are no water powers in the township. Fuel can be had in large quantities both in this township and in the other townships in the district. There

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are no minerals, stone suitable for quarrying or coal or lignite veins to be found. Moose and deer are very plentiful in this district, as well as prairie chickens and partridges. The main line of the Canadian Northern Railway passes through the township entering at the northwest corner, it leaves it at the southeast corner. Trails cross the township in all directions running from Badger and Woodridge to different stations along the railway. Woodridge, a station on the line of the railway, on section 10, township 4, range 11, has a post office, four stores, a school and a church. A large amount of wood is shipped from all these points, giving employment to all the settlers.—*John Molloy, D.L.S., 1904.*

Township 4.—There is very little good land to be found in the south half of this township that would be fit for farming purposes. The soil is nearly all sand, with very little good soil. The greater part of the township is covered with spruce, tamarac, jackpine and poplar, the average diameter being about eight inches. There is very little prairie to be found. The land is mostly rolling or undulating. There are a few large hay meadows in the southwestern part of the township, which produce considerable hay when the rains are not too heavy. The water in the swamps and sloughs is of first-class quality and good water can be found by digging a few feet. There are no water powers. Wood can be had in large quantities all through this district, consisting principally of spruce, tamarac, jackpine and poplar. There are no coal or lignite veins, stone quarries or minerals to be found. Moose, deer and black bear are the principal kinds of game. The main line of the Canadian Northern Railway passes through the township to the south. Trails pass all through the township running to the stations along the line of railway.—*John Molloy, D.L.S., 1904.*

Township 10.—This township can be reached very readily in winter by a trail from Whitemouth station, on the Canadian Pacific Railway, to the northeastern corner of the township, but in summer it is impassable. It is necessary to go along the bank of Whitemouth river a considerable distance and then turn westward into the township. A part of this trail is very wet. The soil is of fair quality and, where not too wet, is well adapted for mixed farming. The high ground is generally scrubby except in the northeastern part, where there is some large poplar. The southern and western parts are swampy and are covered with spruce and tamarac, usually of poor quality. Water of good quality and in sufficient quantities can be obtained by digging from 4 to 10 feet. There is only one small creek, about 4 feet wide and 2 feet deep. The current is not very strong. There is no considerable amount of land liable to be flooded. There are no falls or rapids or water power of any kind. The climate seems to be more moist and less liable to extremes of temperature than the prairie sections. Frosts are common in spring, but not in the after part of the season. Wild hay of good quality is found in small meadows all over the townships chiefly on sections 24, 23 and 26, but the total amount is not large. There is an abundance of wood for fuel in nearly every part of the township, and in the south and west are extensive beds of peat, which would make excellent fuel if properly prepared. No trace of coal of any kind was seen. There are no stone quarries. No minerals of any kind were found in the township. Moose in considerable numbers were seen. also a few lynx, foxes, coyotes, rabbits, partridge, &c.—*A. S. Weekes, D.L.S., 1904.*

Range 12.

Township 8.—This township is all bush, composed of poplar, willow, spruce, tamarac and a few cedar. All the merchantable timber has been cut, lumbering operations having been carried on for some years all along Whitemouth river, which runs through this township, entering it in the southeast corner of section 6 and running through sections 5, 4, 9, 10, 15, 16, 21, 28 and 33. These sections, together with portions of the adjoining sections have been marked on the section boundaries and subdivided into

legal subdivisions in accordance with your instructions. There is still a thick growth of bush all over the township, with a few small marshes and tamarac swamps, the greater portion of which could be drained into Whitemouth river and thus made available for cultivation. All along the river the lands are drier on account of the natural drainage by Whitemouth river and are now available for settlement. The soil is mostly clay loam; the southern part of the township is more inclined to be sandy and gravelly, with small ridges of scrubby jackpine. A good winter road runs down along Whitemouth river and renders it accessible to the Canadian Pacific Railway station at Whitemouth, and can easily be made into a good summer road. Moose, about the only big game, are very numerous; one band of cariboo was seen. Foxes and fur-bearing animals such as mink and otter and muskrat are found. The climate is favourable for farming, and further north around Whitemouth settlement some of the finest crops in the province are raised.—*G. C. Rainboth, D.L.S., 1904.*

Township 9.—This township is reached by trail from Whitemouth, which is about fifteen miles distant. This trail can only be used for loads during the winter time or when the frost is in the ground, otherwise it is too boggy. The soil is generally a rich black vegetable loam and would make excellent farms but that the country is so 'low lying' and level that muskegs and swamps abound, and everywhere the ground is damp and soggy. In the winter it is hard to distinguish all the muskegs as they are often heavily timbered, as is the rest of the country. The whole township is covered with bush varying from light scrub to eighteen-inch timber. The best of the timber has been cut off by local lumbermen, but what remains will be ample for settlers and for 'cordwood' (rather too much). Whitemouth and Birch rivers afford ample water supply, and I would judge from the nature of the country that by digging a few feet, water could be got at any place. There are no water powers or economic minerals. Game is plentiful, moose, deer, foxes and wolves were seen, besides many partridges and rabbits. There were three settlers in the township, all Galicians, with small houses, but no other improvements. The settlement is gradually pressing this way from Whitemouth and this should soon be a prosperous farming country, but at present it is too inaccessible on account of the roads.—*Geo. A. Grover, D.L.S., 1904.*

Township 15 (north and east outlines).—These outlines are rough and hilly, broken by ridges of granite rock and thickly covered with poplar, spruce and tamarac, with tamarac muskegs intervening. The greater portion of the country covered by these outlines is useless for agricultural purposes, but in my opinion this whole surrounding country should be held for a timber reserve.—*E. W. Hubbell, D.L.S., 1904.*

Township 16 (north and east outlines).—These outlines are a series of bare granite rock ridges and knolls, varying in height from 15 to 80 feet. Between these ridges the country is mostly muskeg, covered with tamarac, spruce and poplar, varying in diameter from 4 inches to 14 inches. There is also a little birch and balsam. A considerable portion of these outlines is covered by the waters of lac du Bonnet and its tributaries.—*E. W. Hubbell, D.L.S., 1904.*

Range 13.

Township 2.—There is a considerable amount of good land in this township, the soil being divided between sandy loam with clay subsoil and black loam with sandy loam subsoil. It is very suitable for grain growing purposes as well as for hay. The Canadian Northern Railway passes through section 6, where the station of Vassar is situated, as well as the post office of Vassar. There are well travelled trails leading from this township to Winnipeg and other points in the district. With the exception of part of the southwest corner all of the township is heavily timbered with spruce, tamarac, poplar and cedar from five to twelve inches diameter. There is very little hay to be had in this township, as yet, but it can be procured a few miles to the south and west. The supply of water is good. Mud creek, a stream in the spring about thirty feet wide,

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and nine feet deep, enters the township in section 33 and flows in a southeasterly direction, leaving the township in the southeast corner. Water can also be had in good quantities at a depth of about twelve feet, all of the best quality. In the spring the land adjoining mud creek is covered with water from one to three feet deep. There are no water powers of any account to be had in this township. The climate is temperate, having no summer frosts. Wood can be had in unlimited quantities, both in this township and in the adjoining townships to the north and east. There are no coal or lignite veins in this township. There are no stone quarries, although enough stone can be had in the district for building purposes for the early settlers. There are no minerals to be found in this township. The supply of game is good, all through this district, consisting of black bear, deer, moose, rabbits, prairie chicken and partridge.—*John Molloy, D.L.S., 1904.*

Township 8.—This township is all bush, comprised of poplar, willow, spruce, tamarac, and a few cedars. All the merchantable timber has been cut, but there is still an abundance of firewood and sufficient building timber for local use, lumbering operations having been carried on for some years all along Birch river, which runs through this township. Birch river is a branch of Whitemouth river and runs northwards through this township, entering it in section 1, and running through sections 1, 2, 11, 10, 14, 15, 16, 29, 32 and 31. There is still a thick growth of bush all over the township with a few small marshes and tamarac swamps, the greater portion of which could be drained into Birch river and thus made available for cultivation. All along the river the lands are dryer on account of the natural drainage afforded by Birch river and are now fit for settlement. The soil is mostly clay loam. Old winter roads used by the lumbermen some years ago are still to be found, but are not fit for summer transportation. A good wagon road could be easily made, joining to the present settlement at Whitemouth station on the Canadian Pacific Railway, and thus making this township convenient for settlement. The climate seems to be about the same as the usual Manitoba climate. Moose are plentiful, some cariboo were seen. Fur bearing animals comprise the usual kind such as mink marten, otter, muskrat, prairie wolves and foxes.—*G. C. Rainboth, D.L.S. 1904.*

Township 9.—This township is about fifteen miles southeast of Whitemouth, Man., but the only road to it is on the ice on Birch river and then over some of the old lumber roads, which are also only passable in the winter. The surface of the township is generally covered with moss, but below that there is in some places a rich black loam, which might make excellent farms, were it drained, but at present muskegs are so numerous and the land is all so low and level that it would not appear to be well suited for anything. Much of the township is quite heavily timbered and there is some good cedar and tamarac in the south and west parts of the township. In the north and east parts the timber is generally lighter and muskegs are more numerous. You could get good water any place by digging a three-foot hole, but there are no water powers in the township. No minerals of economic import were seen, though numerous large bosses of granite protruded from the muskegs. There was plenty of game. Moose, deer, wolves and foxes, besides partridges and rabbits. Birch river crosses the southwest quarter of section 6. This is the only part of the township that might probably be settled in the near future.—*Geo. A. Grover, D.L.S., 1904.*

Range 14.

Township 1.—The soil in this township is mostly first class, being either a black or sandy loam with a clay subsoil. It will make first-class land for grain growing purposes when cleared. The whole township is covered with bush, consisting of tamarac, spruce and poplar from three to ten inches in diameter, with a heavy growth of underbrush, being equally distributed over the township. There is very little hay to be

found except on part of sections 24 and 25, where there is a large muskeg containing from two to four feet of water, according to the season of the year. The water is all of first-class quality, both in the swamps and creeks. Excellent water can be had at a depth of from six to twelve feet. Mud creek, a stream about forty feet wide and six feet deep crosses the township flowing in a southeast direction. The land is not liable to be flooded. The climate is temperate, having no summer frosts. Fuel is to be had in unlimited quantities, consisting of spruce, tamarac and poplar. There are no coal or lignite veins. There are no stone quarries or minerals. Game, consisting of moose, deer, black bear, prairie chicken and partridge are to be found all through this section of country. The Canadian Northern Railway passes through the centre of the township from east to west. Sprague, a station on this railway, is situated on the southwest quarter of section 15, where there is a store, post office and school. There are about forty squatters in the township. This part of the country is well supplied with trails, which were in use before the railway was built.—*John Molloy, D.L.S., 1904.*

TOWNSHIPS WEST OF THE PRINCIPAL MERIDIAN.

Range 12.

Township 25.—From Makinak Station, on the Canadian Northern Railway, there is a good trail that goes nearly east to the Indian reserve on the west side of Ebb and Flow lake, and from said reserve there is a trail going north, which crosses the townships from section 2 to section 34. There are also two other trails, one on the west bank of the Ebb and Flow lake, the other across sections 5, 6 and 7, west of Lonely lake; most of these trails run at the edge of hay sloughs, for this reason they may not be practicable in the wet season. The distance from Makinak to the centre of this township by the trails mentioned above would be nearly forty miles. The soil is generally a mixture of clay, sand and gravel covered with a surface of black loam varying from three to eight inches in depth. It should be suitable for agriculture if we compare it with similar soil in township 23, range 14, where settlers have cleared the land and are praising the quality of their homesteads. About three or four years ago the fire ran through the south and west part of the township, and the timber is nearly all fire-killed, but standing; on the north and east part the fire has also run through a few places; nevertheless most of the timber is green; the poplar averages six and eight inches in diameter, of which a good quantity can be utilized for building purposes. There is a large muskeg and hay slough principally around Lonely lake, and east of it, where a quantity of good hay can be made. Part of these large sloughs are covered with thick large weeds seven to nine feet high, and small willow scrub. Lonely lake has an area of little over seven square miles. Ebb and Flow lake, which is a bay of Lake Manitoba, covers only part of sections 1 and 12. The water in the lake is good and fresh; the bottom is gravel and seems to be shallow—at many places of sounding we never found more than seven or eight feet. Good water is easily obtained in any other part of this township by digging a few feet. There are two creeks which empty into Lonely lake; one of them on section 18, coming from west, was dry at the time of the survey; but its bed seems to carry a big body of water when the country is wet. The other creek is on section 22, coming from the north; it is eighteen feet wide and two or three feet deep, with slow current, on account of the dry season and the level surface of the country. Dry poplar is plentiful for fuel. There is no water power, no quarry and no mineral. It is a good country for game: moose, elk and jumping deer were numerous last fall. Partridge and especially rabbits are in abundance; so is the fishing on the lakes, which consists of jackfish and whitefish.—*Paul T. C. Dumais, D.L.S., 1904.*

Range 13.

Township 24.—From Makinak station on the Canadian Northern Railway, there are trails and good roads to Ste. Rose du Lac and Ste. Emélie. From this last place a wagon road continues further, east of the Indian reserve on Ebb and Flow lake, and passes on the southern part of this township, which is at a distance of 22 miles from Makinak station. The nature of the soil is generally a mixture of clay, sand and gravel, with a few boulders here and there, and is covered with a surface of black loam of three to six inches in depth; according to the report of some settlers who are living on similar land, south of this township, they say that the quality of this soil produces the best No. 1 hard wheat. The country is very level and is mostly covered with fire-killed standing poplars, willows and scrub, the fire having passed through this country three or four years ago; however, there are still a few bunches of green poplar of good size, that can be utilized for building purposes. On the north part of section 9 there is a bluff of 150 to 200 green spruce with a diameter of thirteen to sixteen inches and as many fire-killed ones of less diameter and a small quantity of oak trees. There would be a considerable quantity of good hay which could be made in the numerous sloughs spread over this township, but it could be cut only in a dry season on account of the level surface of the country, which is liable to be flooded on its lower part, when it should happen to rain in the harvest season. The surface water is alkaline, but fresh water is obtained permanently by digging ten to twenty feet. There is no stream worth mentioning. The climate is the same as central Manitoba, and summer frosts may be feared. Any quantity of dry poplar can be obtained all over the township for fuel purposes. There is no water power, no quarry and no mineral. It is a good country for game. Moose, elk and jumping deer were numerous last fall; partridge and especially rabbits were abundant. There is no fishing.—*Paul T. C. Dumais, D.L.S., 1904.*

Township 25.—The best route to reach this township would be from Makinak station on the Canadian Northern Railway via Ste. Rose du Lac, a village twelve miles northeast of the station; from Ste. Rose there is a good road as far as section 35, township 24, range 25; from whence there is a trail through the bush which crosses township 25, range 14, in an easterly direction and continues through this township as far as Lonely lake in township 25, range 12. The soil in this township is a mixture of clay, sand and gravel, covered with black loam to the depth of six to eight inches; as there is no prairie the land will have to be cleared and then will be suitable for agricultural purposes, as well as it is in township 23, range 13, where the soil is similar, and is praised by the settlers who are homesteaders there. The surface is very level and is chiefly covered with poplar and willows, poplars averaging from six to ten inches in diameter. The greater part of it has been killed by fire three or four years ago; however, there are a good many bluffs of green poplar yet. Good hay could be secured in the numerous sloughs, all over this township, but it could be cut only in dry seasons on account of the level surface of the country, which is liable to be flooded on its lower part if it happens to be a rainy season. Surface water is generally fresh and could be obtained permanently by digging eight to ten feet. A creek, which was dry at the time of the survey, comes from the north and crosses section 25, 24 and goes out of the township in section 13. The south end of a lake which extends for a few miles north, comes into this township for a little over a mile on section 34 and is surrounded by swampy land. A trail going northwest from section 12 to section 34 continues north as far as the Indian reserve in township 29. Dry poplar is plentiful all over the township for fuel purposes. There is no water power, no quarry, no mineral in this township. It is a good country for game. Moose, elk and jumping deer were numerous last fall. Partridge and especially rabbits, are abundant.—*Paul T. C. Dumais, D.L.S., 1904.*

Range 14.

Township 24.—From Makinak station on the Canadian Northern Railway there are good roads going northeast to Ste. Rose, a distance of 12 miles, and from this last place the trail to Manitoba House passes through sections 3, 2, 11 and 12 of this township. The nature of the soil is generally a mixture of clay, sand and gravel and is covered with a surface of black loam varying from three to six inches in depth. According to the report of settlers who are living on similar land, south of this township they say that this quality of soil produces the best No. 1 hard wheat. The surface of this country is very level and is mostly covered with fire-killed standing poplars, willows and scrub, the fire having passed through this country three or four years ago; however there are yet a few bunches of green poplar of good size which can be utilized for building and fencing purposes. There would be a considerable quantity of fairly good hay which could be cut in the numerous sloughs through this township, but on account of the level surface of the country it would require a rather dry season to harvest the hay with advantage, because the low lands are flooded when the season is wet. On the south part of the township the surface water is alkaline, but permanent fresh water may be obtained at a depth of ten or fifteen feet. The climate is generally the same as in central Manitoba; summer frosts may be feared in new cleared land close to the bush. Dry poplars are plentiful for fuel purposes all over the township. There is no water power, no quarry and no mineral. Moose, elk, jumping deer, partridge and rabbits are the game of the country; a certain quantity of moose and elk were killed last fall.—*Paul T. C. Dumais, D.L.S., 1904.*

Township 25.—The best route to reach this township is from Makinak on the Canadian Northern Railway to Ste. Rose du Lac, a small village with a R. C. church, convent, post office, three stores and one hotel, at a distance of 12 miles in a north-east direction. From this village, there is a good trail as far as section 35, township 24, range 15, from where I had to travel on winter hay road, which extends as far as section 16, a distance of about ten miles from Ste. Rose du Lac. The soil in this township is a mixture of clay, sand and gravel covered with 6 to 8 inches of black loam, and will be suitable for agriculture after the land has been cleared, as has been done in township 23, range 13, where the soil is similar and praised by the settlers, who are homesteaders in that township. The surface is very level and is covered with poplar and willows, the poplar averaging from 6 to 14 inches in diameter. A few scattered spruce of small size were seen in sections 1, 32, 33, 35 and 36. Good hay could be secured in the numerous sloughs all over this township, but it could be cut only in a very dry season on account of the level surface of the country, which is liable to be flooded on its lower part should it rain in the harvest season. The surface water is generally fresh and could be obtained permanently by digging 6 to 8 feet. There is no important stream in this township. The climate is the same as in central Manitoba and summer frosts may be feared. Any quantity of dry poplar can be obtained for fuel purposes all over the township. There is no quarry, no mineral and no water power in this township. It is a good country for game. Moose, elk and jumping deer were numerous last fall. Partridge and especially rabbits are abundant.—*Paul T. C. Dumais, D.L.S., 1904.*

Range 15.

Township 29.—This township has been subjected to so many fires that there is very little green timber left, and that mostly in isolated bluffs on or near the south boundary and along the north part of the west meridian. On all the remainder where the land is dry, another second growth is growing up, but from the number of standing dead trees and the quantity of timber strewn on the ground it must have been sub-

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jected to periodical fires. The land is very stony. One or two small and fairly good farms might be culled out of sections 8, 9, 16, 17 and 20. There are three brothers, 'ranchers' living at the south end of Lake Manitoba, but they do not farm any beyond growing a few potatoes. They have between them some two hundred head of cattle besides horses. There are large hay meadows in sections 5, 6, 7, 8, 17, 18 and 19, where they get enough hay to winter their stock. Although sloughs are numerous and large all over the township they are too wet to grow hay, but around their edges and in the timber bluffs there is abundance of pasture to sustain a large number of cattle. The southwest bay of Lake Manitoba stretches south as far as the centre of sections 16 and 17, and is a little over two and one-half miles wide on the north boundary. I saw no sign of any game other than prairie chicken, muskrat, rabbits and coyotes.—*James Dickson, D.L.S., 1904.*

Township 30.—This township is divided into two parts by Lake Manitoba. There is only an average width of about half a section of land on the west side of the lake. Here there are four squatters. They live chiefly by fishing. They are all half-breeds, and natives of the country. The lake is a little over two and one-half miles wide on the south boundary, and four miles wide on the north boundary. On the east side of the lake the land is worthless, either a mass of stones or wet sloughs. The dry land is all thickly timbered. The timber is small poplar, balm of Gilead and a few birch near the water, and there is a very dense undergrowth of hazel, willow and alders. This is especially noticeable on the boundaries. There is no hay. Steeprock lake is a fine sheet of beautiful clear water, lying nearly between the east boundary and east meridian. Its south end is only a few chains north of the south chord, and it extends north to within a little over half a mile of the north boundary. Pike river enters it at its most southerly point and it discharges into Lake Manitoba on the north. There is only a narrow strip of land between the north boundary and Lake Manitoba. I saw a few signs of moose; rabbits and partridge were very plentiful, also muskrats and coyotes. There are no roads, but it is easily accessible from the south.—*James Dickson, D.L.S., 1904.*

Range 16.

Township 15.—The villages of Springhill and Franklin are situated in this township, the former being a station on the Clan William branch of the Canadian Northern and the latter a station of the Minnedosa branch of the Canadian Pacific Railway. From these villages any section in the township can be reached. The roads throughout the township are mostly all opened up and in good condition. The soil in the township is a deep rich loam, underlaid by a clay subsoil, and can be classed as first. It is suitable for mixed farming. The surface of the township is mostly gently rolling. The sections have been cleared and are cultivated, with the exception of a few in the northwest part of the township, which will be described below. No timber of any account exists in this township, with the exception of some small poplar, probably up to eight or ten inches in diameter, occurring in the north halves of sections 31 and 32, and the northeast quarter of section 19. A few small poplar bluffs occur in the two northern tiers of sections, in various places, but they are preserved for wind-breaks only. The water in the township is fresh, and is supplied mostly from Stony creek, which crosses sections 31, 7, 8, 9, 4, 3 and 2. This source of supply is permanent. Another small spring creek flows through sections 33, 34, 27, 26 and 25, which, however, dries up in the summer season. Another small creek flows easterly through sections 17, 16, 15, 14, 11 and 12, and this also dries up in the summer time. There is no fuel in this township, but it can be procured in township 16, range 16.

No hay exists in this township. No water power, no stone quarries and no indications of minerals are found. The climate is very good and of recent years the settlers state that no summer frosts have occurred. The only game is prairie chicken. The

Clan William branch of the Canadian Northern Railway traverses this township in a southwesterly direction, passing through sections 24, 23, 22, 15, 16, 17 and 18; and the Minnedosa branch of the Canadian Pacific Railway crosses through sections 1, 2, 3, 4, 5 and 6. The east half of the township and sections 4, 5, 6, 7, 8, 9, 16, 17, 20, 21 and 28, are mostly gently rolling land. Patches of willow scrub occur about some of the sloughs and near and along some of the road allowances; with the exception of this, these sections are all cleared and cultivated. Section 18 is gently rolling. The east half and southwest quarter are cleared and cultivated. The northwest quarter is covered with scrub. Sections 19 and 30 are rolling land. Considerable scrub exists on these sections, though they are cleared and cultivated in some parts; poplar trees up to ten inches in diameter were found on the northeast quarter of section 19. Sections 29 and 30 are rolling; some scrub and small poplar bluffs occur on these sections; with the exception of this, they are pretty well cleared and cultivated. Section 31 is very rolling. It is broken by Stony creek. Some poplar up to ten inches in diameter were found on this section and plenty of heavy willow scrub. Some clearing has been done on the southeast quarter. Section 32 is rolling and covered in the north half with heavy willow scrub and some poplar up to ten inches in diameter. The south half is partly cleared and cultivated.—*Lennox T. Bray, D.L.S., 1904.*

Township 16.—This township can be reached from Eden very easily, being only about 3 miles west of it; roads are opened up leading into the township. The soil of this township varies from a deep rich loam to a clay and is suitable for mixed farming. The surface is gently rolling in some parts and very rough and broken in others as will be described below. Considerable scrub remains throughout the township, but this is being gradually cleared off as the settlers proceed in breaking up their land. Poplar is the chief timber, but the best of it has been pretty well cut out. Trees of varying sizes up to 16 inches in diameter can be obtained on most of the sections, with the exception of sections 1, 2, 3 and 4; these sections are mostly cleared. Hay of a very good quality is found in the valley of Stony creek, also on the eastern part of section 30 and the northern part of section 31. It is also harvested from around every small slough throughout the township. These sources, however, do not furnish sufficient feed for the settlers purposes. The water in this township is fresh and is supplied mostly from Stony creek, which flows southwesterly through sections 33, 28, 21, 17, 8, 5 and 6. Hazel creek, which flows southeasterly through sections 22, 15, 10, 11, 12 and 1, and Snake creek, which flows through sections 35, 36, 2 and 24. There are other small spring creeks flowing out of various sections into these large creeks. The climate is very changeable. A heavy frost occurred on June 21. The settlers state that the portion of the township lying west of Stony creek is more or less subject to frosts, while that portion east of the creek is seldom touched. But as a rule summer frosts occur more in the valleys than on the higher lands. The only fuel is poplar, which can be secured to a certain extent from off most of the sections. There are no water powers in this township, no stone quarries and no traces of minerals were found. The chief game is wild duck and prairie chickens, but both are scarce.—*Lennox T. Bray, D.L.S., 1904.*

Township 17.—This township is best reached from Eden by roads which are opened up into it. The soil of this township is comparatively good, being mostly a rich loam underlaid by a clay subsoil and would be suitable for mixed farming. The surface is mostly all timbered with the exception of where clearing has been done. It is more or less rolling and in the eastern part of the township it is very rough and broken by ravines. Poplar is the chief timber, though spruce and birch are found to be fairly plentiful. Poplar was found throughout the township and measures up to 24 inches in diameter. The spruce is scattered about in the northern part of the township; it will measure up to 18 inches in diameter, though most of the larger

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spruce has been cut out. Hay of a good quality was found on parts of sections 4, 6, 7, 17, 18, 20, 22, 27 and 29. The water in this township is fresh and is obtained partly from Kerr lake, which covers a portion of the northwest quarter of section 30 and the southwest quarter of section 31, and Grassy river, which enters the township at the northwest corner of section 34 and flows southeasterly through sections 34, 27, 21, 22, 23, 24 and 13. Numerous small spring creeks were observed flowing easterly out of the eastern tier of sections. The only fuel is wood and can be procured from off any section in the township. Partridge, elk and moose are found, all of which seem plentiful. The climate is very good, but the country is subject to summer frosts. No water powers, no stone quarries and no indications of minerals were found in the township.—*Lennox T. Bray, D.L.S., 1904.*

Township 29.—This township is all either timbered land or sloughs. The timber is poplar and balm of Gilead, with thick underbrush and a few small spruce, mostly mere poles. The largest I saw was near the southeast corner of section 16. The timber was tall, but none more than ten inches in diameter. The trees had all been killed by fire two years ago and the grove had an area of about three acres. There is no hay to be got west of the centre meridian, the sloughs being too wet. East of that line there are large meadows of good hay and a large quantity was cut last season. Most of the township has been burned over more or less, but it is all covered again with a vigorous second growth. The land is mostly stony and not fit for farming. I was not able to run the north boundary of section 19, owing to a large and very wet slough filled with tall reeds. None of the sloughs I saw can be drained. Spence lake occupies a part of sections 25, 26, 36, nearly the whole of section 35, and a small portion of section 34. There are two half-breed families located on the northeast corner of section 34. They have cleared enough land for their buildings, and a small patch for potatoes, but have each a good herd of cattle. They said they did not wish to locate, so I took no declarations. There is no road to the west except the trail I cut to get in by, but there is a good trail from there south to Ste. Rose du Lac. Moose, elk, jumping deer and partridge are all fairly plentiful.—*James Dickson, D.L.S., 1904.*

Township 30.—This township is all bush land and wet sloughs alternating. The timber is poplar and balm of Gilead, with a dense undergrowth all over. I saw three small groves of small spruce. None of the timber is of any commercial value. Many of the sloughs (and this remark will apply to all of the townships in my contract) are full of very tall reeds, which had to be mown down by brush hooks before the lines could be either run or chained. I found this very tedious, as in the majority of cases it meant wading also. The land is nearly all stony, and even where it is not so, it has not sufficient elevation above the sloughs—none of which can be drained—to fit it for farming. This also applies to the other townships. There is one half-breed rancher living on the shore of Lake Spence, near the south boundary on section 3, but he did not desire to locate. There is another, an Iclander, on the northeast quarter of section 36. I took a declaration from him. With the exception of the east one and three-quarter miles and six chains of the north boundary of section 36, which is in Lake Manitoba, the north boundary is all in Lake Winnipegosis. A good wagon road a little south of the boundary, locally known as the 'Meadow portage trail,' extends between the lakes, striking Lake Manitoba about three-quarters of a mile south of the boundary, from which the Ste. Rose du Lac trail starts and runs south only across the township between Lakes Manitoba and Spence. Lake Spence is a fine body of sweet, pure, spring water. There is not a single stream flowing into it. It abounds with fish and water fowl, and extends north into sections 23 and 24. On the district map it is shown as a bay of Lake Winnipegosis. This is an error; there is no connection whatever between those two lakes. It discharges into Lake Manitoba through a fine creek a short distance north of the south boundary. North of this lake there are some good hay mea-

dows and a large quantity was taken off them last season by the Meadow portage settlers. There are moose and jumping deer, partridge and rabbits. The township is easy to reach either from Ste. Rose du Lac or Winnipegosis village.—*James Dickson, D.L.S., 1904.*

Range 17.

Township 29.—In the season of 1898, I subdivided the south part of this township and all I did now was to run the east three miles of the north chord, the north two miles of the west meridian, the north half mile of the next, and the north two miles of the other three, also the north boundary, seventeen and one-half miles in all. This part of the township is all thickly timbered, alternating with very wet sloughs, with bluffs of willow, alder and spruce, scattered through them. There is a large and very wet slough through which the east boundary runs for three miles, which prevented me from running the east part of the north boundary of section 24. It is a perfect quagmire and full of tall reeds. I waded into it until the men sank over the waist. The timber is poplar and balm of Gilead, a few clumps of small spruce and still smaller tamarac and a very dense undergrowth. Very little of the timber is large enough for house logs. The sloughs are very wet, producing little hay, and are not capable of being drained. The dry land is stony. There is one squatter on section 30. I found a newly-opened road from Fork river station into the northwest quarter of section 20, where a new settler was starting. There are no other roads in that part of the township. Moose and partridge are plentiful.—*James Dickson, D.L.S., 1904.*

Township 30.—This township is all either heavily timbered or open marsh. The timber is poplar and balm of Gilead, with a dense undergrowth of hazel, willow and alder. With the exception of some spruce on sections 2, 3 and 10, the timber is only fit for firewood and fencing. What spruce I saw is of fine quality but not large. The land is stony. The marshes are mostly too wet to produce hay and are not capable of being drained. This township is bounded on the north by Lake Winnipegosis, about one-third of it being in the water. Most of the shore is marsh, the water only approachable in summer at isolated points. There were twenty squatters, all Galicians, except three, a father and two sons, who are Canadians. The land is not such as is likely to attract any settlers except those from those parts of the old world where the ownership of even a moderately sized farm is a boon to only the few, and enough hay can be cut around the sides of the sloughs to maintain for each a small herd of cattle. The squatters (they are mostly on the west side of the township), have made a road to Winnipegosis village, but the only means of access to the east half during summer is by water. Moose and jumping deer are plentiful in the woods, with muskrat, duck and geese on the lake shore.—*James Dickson, D.L.S., 1904.*

Range 21.

Township 11.—This township is about six miles due north of Alexander, a station on the main line of the Canadian Pacific Railway, and about two miles due south from Westwood, a station on the Lenore branch of the Canadian Northern Railway. Roads are opened up leading into this township from both these places. The soil of this township on the higher lands is a sandy loam underlaid by a clay and gravel subsoil. While on the lower lands, that is in the valley of Assiniboine river, it is a mixture of loam and white clay. The surface of the township is open gently rolling prairie, with the exception of those sections adjoining the valleys of Assiniboine and Little Saskatchewan rivers. Those sections are broken by ravines which contain scrub poplar and oak. No timber exists in this township, with the exception of scrub poplar and oak. The fuel used is whatever can be bought at the neighbouring towns. Hay of a good quality

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grows on the south halves of sections 7, 8 and 9, and the north halves of section 4, 5 and 6. Some of these meadows are drained and farmed. They, however, contain a certain amount of alkali. The water of the township is fresh, its source being Assiniboine and Little Saskatchewan rivers. The latter flows southeasterly through sections 34, 35, 26, 25 and 24, while the former flows easterly, winding around through sections 6, 5, 4, 3, 10, 11, 2 and 1. A creek with source in section 30 flows southerly through sections 19, 18, 7, 8 and 5 into the Assiniboine. A couple of small creeks flow southerly out of section 16. No water powers occur in this township and no stone quarries or indications of minerals were found. The game is prairie chicken. The climate is very good. No summer frosts occur. Sections 4, 5 and 6 are broken by Assiniboine river. They are open rolling prairie south of the river, while north of the river they are open, nearly level, meadow lands. Willows grow all along both sides of the river, and on the northeast quarter of 4, some elm and maple up to ten inches in diameter were noticed. Sections 7, 8 and south half of 9 are open, nearly level meadow lands. The north half of 9 is rough and broken by hills and ravines, containing scrub. Section 16 is very rough and broken by hills and ravines containing scrub poplar. The central northern part is less broken and can be farmed. A trail crosses the west half of this section in a northerly direction. A couple of spring creeks flow southerly out of this section. Section 17 is rough and broken by hills and ravines containing poplar scrub in its east half and northwest quarter. The southwest quarter is nearly level meadow land. Section 18 is broken in its northern part by hills and ravines; the remainder of the section is nearly level meadow land. Section 19 is high rolling prairie; it is broken on its southern side and its east half by hills and ravines, some of them containing scrub poplar. Section 20 is broken on its western and southern sides by hills and ravines, some of them containing scrub; the remainder of the section is open, gently rolling cultivated land. Section 21 is slightly broken in its eastern part by a ravine containing scrub poplar; the remainder of the section is open, gently rolling cultivated land. Section 27 is slightly broken in its northern half by ravines; the remainder is open, gently rolling cultivated land. Sections 28 and 29 are gently, rolling cultivated land; some small poplar bluffs occur on the southwest quarter of section 28. Section 30 is rolling prairie; it is broken by a ravine which leads from the southeast corner of the section into the northwest quarter. Sections 31, 32, 33 and 36 are open, gently rolling cultivated land. Sections 34 and 35 are broken by Little Saskatchewan river and ravines leading to the same. Some of these ravines contain scrub. Willows grow along the edges of the river. The central western part of section 34 and the northeast quarter of section 35 are open, gently rolling cultivated land.—*Lennox T. Bray, D.L.S., 1904.*

Range 22.

Township 3.—This township lies in southern Manitoba. The soil is a rich black loam with clay subsoil. Whitewater lake occupies a large part of the township. This lake is a shallow body of alkaline water with extensive marshes and low hay lands on the west side. The water in the lake some seasons being high, floods the low lands, and in dry seasons there is a great increase of land on which hay is cut. The lines in this township are very irregular. I found most of the mounds, which were in a good state of preservation. There is no timber in this township and the settlers have to go some ten miles for fuel. There are no minerals or stone quarries. The settlers go in chiefly for wheat growing and appear very successful. There are no streams of any account. It is a difficult matter to get good water, as nearly all the well water is alkaline. The Deloraine branch of the Canadian Pacific Railway runs through the southern part of this township.—*W. J. Deans, D.L.S., 1904.*

Township 36.—The Prince Albert branch of the Canadian Northern Railway passes within a few miles west of the southwest corner of this township. There are no summer trails through the township. The soil is very poor, being principally sand, with gravel and stones, and with a very light deposit in some places of a few inches of black loam. It would be difficult to say for what kind of farming or other industry such a combination would be suitable. The whole surface is covered with a light growth of jackpine, spruce, tamarac and scrub, small jackpine predominating. The spruce and tamarac are about equally distributed. All the timber is small, rarely attaining seven inches in diameter, although a few small bluffs containing some eleven-inch timber were met with. The whole township has been burned over at some past date and a good many of the dead trees are still standing. There is no running water. The water in the sloughs and ponds is generally fresh. There are no water powers. Hay may be cut around some of the sloughs but in no great quantity. There are no large hay marshes. I have had no experience in this part of the country as to climatic conditions during the summer months. During the winter it was exceedingly cold, but the air was clear and dry. Very little snow fell during the time engaged on the survey. In the fall of 1904 the snow fell to the depth of one foot before the frost was on the ground. Fuel consists of small spruce, tamarac and jackpine, both dry and green. No minerals were seen. Game consists of moose, which are numerous.—*H. B. Proudfoot, D.L.S., 1904.*

Township 37.—The southwest corner of this township is about three miles from the Prince Albert branch of the Canadian Northern railway at a point about midway between Cowan and Fishers stations. There are no summer trails leading through or into it. The soil is principally sand, gravel, stones, with, in a few places, a slight deposit of black loam. It is very poor, and I do not think it would raise any kind of crop and being so stony cultivation would be very difficult. The surface, level, rolling and undulating, is mostly covered by spruce or tamarac swamps and small timber, separated by low jackpine ridges. The timber is all small, three inches to five inches in diameter; trees as large as ten inches were seen but are very scarce. Spruce, tamarac, jackpine predominate, and some small birch, balm of Gilead, poplar and balsam were met with near the north boundary. Hay can be cut around the sloughs or grass swamps, but there are no large hay meadows. The water is generally fresh in the swamps, a few small creeks were crossed in the northwesterly part of the township but they as well as the sloughs, were frozen to the bottom. There are no water powers. I have had no experience of the weather in this immediate locality during the summer, but I am informed that summer frosts are not generally prevalent. During the time of survey, January, 1905, there were no storms of any kind, the days were generally clear; the thermometer never registered higher than 8 degrees below zero. There are large quantities of spruce, tamarac and jackpine, both dry and green, but of small size. No stone quarries or minerals were seen. Game consists of moose principally. These are in large numbers.—*H. B. Proudfoot, D.L.S., 1904-5.*

Range 23.

Township 12.—The villages of Kenton and Harding, stations on the Lenore branch of the Canadian Pacific Railway, are situated in this township. From them any of the sections can be reached. The soil of this township is exceptionally good, being a deep rich loam underlaid by a clay subsoil, and is suitable for mixed farming. With the exception of the northeastern and southern part of the township, considerable willow and poplar scrub exists, becoming heaviest in the northwestern part of the township. The timber in this township is small. It is chiefly poplar and measures up to three or four inches in diameter. Some timber on the northeast quarter of section 9, the north half of section 19 and on section 31, will measure up to six and eight inches

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in diameter. Hay in limited quantities grows on the south halves of sections 32 and 33, the east half of section 34 and the west half of section 35. The water of this township is inclined to be alkaline. The chief source of good water is from wells. A creek flows southeasterly through sections 34, 35, 26, 24, 13, 12 and 1; the water of this creek, however, is strongly alkaline. The fuel used is chiefly poplar procured throughout the central and northwestern part of the township. The supply, however, is very limited. No water powers exist in this township; no stone quarries and no indications of minerals were found. The game is prairie chicken, which seem to be very plentiful. The climate is very good, no reports of summer frosts were heard. Sections 1, 2 and the east half of section 3 are gently rolling. Scrub grows on the northern parts of these sections; the southern parts are broken by small ravines. The west half of section 3 and section 4 are nearly level, the southern parts are open prairie; the northern parts contain scrub in patches. Section 5 is very rolling; considerable scrub grows on the east half; the west half is open rolling country. Sections 6, 7 and 8 are mostly open rolling country. Sections 9, 10, 11 and west half of 12 are gently rolling country; scrub grows on various parts of these sections. Poplar up to eight inches in diameter occurs on the northeast quarter of 9. The east halves of sections 12 and 13 are rolling and contain considerable scrub. The west half of section 13, sections 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 30, 29, 28, 27 and west half of 26 are gently rolling land. Considerable scrub occurs throughout these sections. The south half of section 18 is open rolling prairie. Sections 24, 25 and east half of section 26, are gently rolling, with considerable scrub. Traces of alkali are found on these sections. Sections 34, 35, 36 and east half of section 33 are mostly open rolling land. Traces of alkali occur on these sections. The east half of 34 and southwest quarter of 35 are broken by a muskeg. Good hay grows around this muskeg. The west half of section 33 and section 32 are rolling. Scrub grows on the northern parts of these sections, and good hay grows on the southern part. Section 31 is gently rolling; heavy willow scrub and poplar up to eight inches in diameter grow on this section. The Lenore branch of the Canadian Pacific Railway traverses through the south half of section 12, southeast quarter of section 11, the north halves of sections 2, 3, 4, 5 and 6. The village of Kenton is situated on the northwest quarter of section 6, and the village of Harding on the southeast quarter of section 11.—*Lennox T. Bray, D.L.S., 1904.*

Township 37.—The Prince Albert branch of the Canadian Northern Railway is a few miles south of the southwest corner of this township. Fisher's siding is the nearest station. There are no summer trails however. The soil is very poor, being sand, gravel, &c., with a very light deposit of black loam in some places. The swamps are very soft. The whole of the township is timbered with spruce and tamarac, averaging between five inches and six inches in diameter, in swamps—which comprise about three-quarters of the area—with ridges of jackpine, and some poplar, birch and balm of Gilead. The different timbers are about equally distributed. Some few bluffs of large timber were encountered, but their areas are small. Hay can be cut around most of the grass swamps and sloughs but there are no large marshes. There are a few small brooks, but at the time of survey they were frozen to the bottom so the quality of the water could not be ascertained, ice being always fresh. In the ponds the water is slightly alkaline. There are no water powers. The climate was exceedingly cold at the time of survey, but there were no storms. Snow did not fall between January 1 and February 18 in this district. On account of the large amount of swamp lands I should surmise that summer frosts would be very prevalent. Wood for fuel is in abundance. No stone quarries or minerals were seen. The game consists of numerous moose, jumping deer and small fur-bearing animals, and chicken and partridge.—*H. B. Proudfoot, D.L.S., 1904-5.*

Range 24.

Township 20.—This township is situated on what is commonly known as Riding mountain and is located about fourteen miles north of Kelloe station on the north-

western branch of the Canadian Pacific Railway. It may be easily reached by good wagon roads, either from Shoal lake, Solsgirth or Kelloe. The village of Rossburn is situated immediately adjacent to the southwest corner of the township and therefore affords the most convenient post office and local supply station. The Canadian Northern Railway is at present being constructed through it. The soil of this township is chiefly a black loam from six inches to twelve inches in depth, with a clay subsoil and is apparently well suited for general farming purposes. The raising of cereals has not yet been undertaken to any extent, but the Galician settlers raise all kinds of garden produce very successfully. Almost the whole of this township is situated on what is known as Riding mountain and is of a rolling and hilly character and much broken by numerous large and small lakes. The township is almost entirely covered by poplar woods and in many places a heavy growth of hazel and willow scrub. Small tracts of prairie land were noted on sections 6, 10, 11 and 25. As above intimated this township is well covered with poplar timber, varying in size from three inches or four inches up to one and one-half feet in diameter and such may be found in almost every section of the township. No spruce or other variety of timber suitable for manufacturing into lumber occurs upon this township. Numerous small hay meadows are scattered everywhere throughout this township, affording an abundant natural supply of this useful commodity. This township is exceptionally well watered by the numerous lakes which are scattered over its surface and at least one creek which forms the outlet of the largest of the lakes (Gundy lake) and flows in a south-westerly direction through sections 8, 5, and 6. Gundy lake covers a large part of sections 9 and 10 as well as parts of 15 and 16, whilst Fishing lake, which is the second largest body of water in the township, covers a large portion of sections 23, 24 and 26. Other smaller lakes occur upon sections 2, 3, 4, 5, 15, 16, 17, 21, 22, 24 and 28 and the water of all the above lakes is quite fresh and some of them, particularly Fishing lake, are said to contain abundance of fish. No water powers occur upon this township. As this township was surveyed between September 24 and October 21, the climate was cool and autumn-like and one or two flurries of snow were experienced and frosts usually occurred during the nights. As to summer frosts I have no definite information except that it was observed that very fine crops of wheat and oats were grown and harvested upon section 6 of township 21, range 24, which immediately adjoined this township. The poplar forests occurring upon this township furnish an abundant supply of fuel for many years to come, provided it is protected from the ravages of forest fires, which too frequently sweep over this western country. No stone quarries are known to exist upon this township. No minerals of economic value are known to occur upon this township. Several varieties of game are found: moose, jumping deer, black bear, mink, duck, prairie chicken and ruff grouse.—*J. W. Tyrrell, D.L.S., 1904.*

Township 21.—This township is situated about twenty miles due north of Kelloe, on the Northwestern branch of the Canadian Pacific Railway, and may be easily reached from either Shoal lake, Solsgirth or Kelloe, by good wagon roads; that from Solsgirth perhaps affording the shortest and best connection with the railway. Ranchvale post office is situated within a mile of the southwest angle of this township, and is only about six miles north of the village of Rossburn, where there is not only a post office and telephone station, but several general stores. The Canadian Northern Railway is at the present time being constructed through this village. The main Dauphin trail following up the valley of Birdtail creek passes diagonally through this township from section 6 to 35. The soil of this township varies from first to second class, and consists chiefly of a good black loam from six inches to eight inches in depth, with clay subsoil, and is evidently well suited for the raising of all kinds of ordinary farm produce, including oats and wheat. For, during the time that I was in the locality of this township, I saw exceptionally fine crops of oats and wheat harvested upon sections 6

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and 16, large portions of which sections were under cultivation. This township is largely composed of very hilly timber country, but it is intersected in a northeasterly and southwesterly direction by the valley of Birdtail creek, from a half to two miles in width, which is chiefly prairie land of apparently very fine quality. The whole of this township, excepting the valley of Birdtail creek, is covered with timber, chiefly poplar, but a few groves of spruce occur in the more northerly and easterly sections of the township. An old sawmill was located upon section 13, but it has now been removed as nearly all of the timber suitable for the manufacture of lumber has been culled out. The surface of this township being somewhat drier than the average in this district, the occurrence of hay marshes is not as common as elsewhere, however several may be found in various parts of the township, notably upon sections 1, 5, 9, 16, 25 and 34. Although few lakes occur upon this township, it is particularly well watered by Birdtail creek, which flows in a southwesterly direction through sections 35, 26, 27, 22, 21, 16, 17, 18 and 7. The water of this stream is fresh and good and contains large numbers of fine fish. In addition to this stream and some small tributaries, there is a large lake in the southeast part of the township covering portions of sections 1, 2, 11 and 12; also another lake covering portions of sections 24 and 25, and still another of considerable size chiefly upon section 32, all of which are composed of fresh water. Birdtail creek, which is a stream averaging about thirty feet in width, two or three feet in depth, with a velocity of about two miles per hour, affords a certain amount of water power, though comparatively limited in extent. The remains of an old mill dam were found upon section 35, showing that the water power of this stream has already been recognized as available in the manufacture of lumber. This township having been surveyed chiefly during the month of October, cool autumn weather was of course experienced, but judging from the fine crops of grain which were harvested upon sections 6 and 16, the climate must be such as to admit of the growing and ripening of these crops, and it may be taken as the best evidence that no severe summer frosts had occurred. Everywhere upon the higher hilly portions of this township may be found abundance of good poplar woods for purposes of fuel. Spruce is also found in some places though in quite limited quantities. No stone quarries are known to exist upon this township, although in some places, particularly upon sections 22 and 23, very rough rocky hills occur, and it is possible they may contain good stone for building purposes. No minerals of economic value are known to occur upon this township. This township being situated immediately to the south and adjoining the timber reserve, it is the frequent haunt of several varieties of wild animals, notably moose, elk and jumping deer. Prairie chicken and ruff grouse are also quite numerous.—*J. W. Tyrrell, D.L.S., 1904.*

Township 26.—From township 26, range 26, we followed the Grand View trail till we come to a road running north along the east boundary of section 3, township 26, range 24. This road we followed north as far as the northeast corner section 22, where we camped. The soil in the part of the township surveyed by me was very light and of poor quality. The surface is very rolling and uneven and covered with a heavy growth of poplar and willow scrub with large poplar and spruce to the north and west. There are a few hay sloughs but good hay is not very plentiful. A few streams of very good water flow through the township in a southeasterly direction. These streams are fed by springs and do not dry up during the summer. The land is not liable to be flooded. No water power is available in the township. The climate is dry and subject to summer frosts. Poplar and spruce for fuel can be had in the northern part of the township, but no coal or lignite exists. No stone suitable for quarrying nor minerals of economic value exist in the township. Moose, elk, black bear and jumping deer are very plentiful, as are also partridges, prairie chickens and rabbits.—*Charles Harvey, D.L.S., 1904.*

Range 25.

Township 7.—This township is in southern Manitoba and is well settled. The settlers are engaged in mixed farming. The soil generally is a sandy loam and produces wheat of a very superior quality. The southern part of the township is occupied by extensive marshes. These marshes occasionally dry up, but at the present time the water is from four to six feet in depth. There is quite a large body of open water in sections 4, 5, 8 and 9, known by the name of Maple lake. I am told that some five years ago this lake also dried up and that it was possible to drive where there is now seven and eight feet of water. Extensive marshes also occupy sections 25, 26, 35, 36. There is a body of open water on sections 25 and 36, known by the name of Plum lake. This lake and the surrounding marshes occasionally dry up. There is a great quantity of hay made from the grass in these marshes. I was informed that one man pressed and shipped in 1903 over eight hundred tons, but this season owing to the mild winter there is no market for hay. The Arcola branch of the Canadian Pacific Railway runs through the southerly part of this township and the Canadian Northern Railway runs through the township, entering it near the southeast corner and leaving it near the northwest corner. There is no timber in this township. The settlers bring in by railway lumber and fuel. I found quite a large number of the mounds destroyed. Owing to the wet nature of the country it was necessary for me to do some 16 miles of this work in winter.—*W. J. Deans, D.L.S., 1904.*

Township 21.—This township is situated about twenty miles north of Solsgirth station on the northwestern branch of the Canadian Pacific Railway and about six miles north of Rosburn, through which the Canadian Northern Railway is at the present time being constructed. Ranchvale post office is situated within one mile of the southeast angle of the township and the main trail following the valley of Birdtail creek towards Gilbert plains leads from Solsgirth on the Canadian Pacific Railway, through this township by way of Rosburn and Ranchvale. The soil of this township is chiefly that of a rich black loam, becoming more sandy in character in certain sections toward the valley of Birdtail creek, where the subsoil is of a sandy or gravelly character, although the prevailing subsoil of the township is clay. The land in the township is well suited for the raising of general farm produce. Wheat and oats as well as other varieties of grain are already successfully raised upon some sections, which for years have been occupied by Canadian settlers. The greater portion of this township is quite hilly in character and covered with poplar timber together with hazel and willow scrub, although some prairie is found in the valley of Birdtail creek upon sections 1, 2, 11, 12 and 13. The timber of this township having been largely consumed by fires some years ago, the surface is chiefly covered by a young growth of poplar and in some cases the growth of willow and hazel scrub is very heavy. Large timber is still found upon some sections, notably on portions of sections 9, 10, 14, 15, 20, 21, 22, 23, 25, 33, 34, 35 and 36. This township is abundantly provided with natural hay in the many sloughs which occur upon its surface. It is scarcely necessary to enumerate the sections upon which these hay meadows occur since they may be found upon almost every section in the township. There are no large bodies of water occurring upon this township, but it is exceptionally well supplied with fresh water streams, three of which flow in a southeasterly direction through the township and discharge into the main stream of Birdtail creek, which passes through sections 1, 2 and 12. The water of these creeks is fresh, and in Birdtail creek are to be found plenty of good sized jackfish as well as some other varieties. No water power of any consequence occurs in this township. Judging from the number and extent of the farm products now grown upon this township it is evident that the climate must be not unsuited for their production. excellent crops of wheat, oats, &c., having been harvested under my own observation. The poplar and spruce timber growing in various sections of this township form an abundant local fuel supply.

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No stone quarries are known to exist upon this township. No minerals of economic value are known to occur upon this township. This township being much more settled than others adjoining it, game is now somewhat less abundant than formerly, but even yet it is no uncommon occurrence to meet with moose or jumping deer, whilst prairie chicken are very numerous.—*J. W. Tyrrell, D.L.S., 1904.*

Township 38.—The trail from Swan lake to Fort Pelly passes directly through this township, but is in very bad condition southwest of the south boundary. Eventually another route will be found from some point on the Canadian Northern nearer than Swan River station. The soil is generally clay with an alluvial deposit of black or clay loam of varying depth. It is well adapted for all kinds of farming. This township is timbered throughout. Near Swan river the timber is principally poplar, cottonwood and some spruce, all of large size. More or less large timber, poplar chiefly, is scattered throughout the township. In the northwesterly portions the greater part of the timber is small poplar. The timber is good for all purposes. I have been asked several times for a description of it by parties intending to erect sawmills. With the exception of that in and around the sloughs, hay is very scarce. Swan river flows from south to north through the township and there are also numerous brooks of from a few links to 20 feet in width. These waters are all slightly alkaline, but not to any appreciable extent. At the time of survey the water in Swan river was very low, the current strong and the water shallow. On account of the height of the banks there is no great danger of flooding any large area of land. Power could be developed on Swan river, but to what amount I cannot state, being ignorant of the storage facilities up stream and the spring flow of water. Frosts were experienced several times during the summer, but there is no doubt that with the clearing of the land and the drainage of the country they will discontinue. Wood is the only fuel available, but there are large quantities of that. No stone quarries or minerals exist. There are large numbers of moose, bear and partridge.—*H. B. Proudfoot, D.L.S., 1904.*

Township 39.—The cart trail between Fort Pelly and Swan lake passes through the southeasterly portion of this township, crossing the Prince Albert branch of the Canadian Northern Railway near Swan River station. This trail south of the township is in very poor condition for travelling. Another trail leaves the above railway about one mile south of Birch River siding, and runs into the northwesterly portion of the township. This road is in fairly good condition. The soil is very variable, changing continually from sand to clay in the subsoil and from black and clay loam to sandy loam in the alluvial, but it is all suitable for general agricultural pursuits. There is a small area of prairie in sections 19 and 30; the remainder of the township is timbered principally with small poplar; but along the numerous streams large poplar, cottonwood, spruce, tamarac and some maple, elm and ash occur. Hay can be cut around most of the sloughs and grass swamps and at places in the willow swamps. No large hay marshes were encountered. The township is very well watered with numerous streams, principally the Swan, Woody and Birch rivers, which are all fresh water streams, not alkaline, and are in well defined valleys, and all have strong currents. No water power is available without extensive artificial works. The district is very subject to summer frosts. The fall of 1904 was very mild and fine, with no wet weather. Wood is the only fuel, but it is abundant. No minerals or rock exposures were noticed. Moose, bears, beaver, chickens and partridge are found.—*H. B. Proudfoot, D.L.S., 1904.*

Township 40.—This township lies east of the Canadian Northern Railway, between Birch river and Novra station. An old trail, in fairly good condition, leaves the railway about one mile south of Birch River station and passes through township 39, range 25, about one and a half miles south of the south boundary of township 40, range 25. From this trail, I have cut a road running northeasterly, crossing the south

boundary near the southwest corner of section 5, and terminating about the centre of the northeast quarter of section 22. The soil is principally clay, with an alluvial deposit of black and clay loam of a few inches in depth. With the clearing of the country and the drainage of the land lessening thereby the liability of summer frosts, this section will be well adapted for mixed farming. The surface is undulating and timbered throughout with poplar, cottonwood, spruce, birch and tamarac, and underbrush very thick. The first four varieties of timber mentioned occur principally in the northwesterly portion of the township, while the large swamps in the easterly part are almost wholly timbered with spruce and tamarac. All the different kinds of timber are well distributed as to size, running from a few inches up to 30 inches in diameter. The path of a cyclone, which passed over this country a few years ago, is clearly marked across sections 3, 4, 5, 6, 7 and 8, leaving a bad windfall about half a mile in width. There are a few small hay meadows scattered throughout the township, but no large marshes. Numerous small brooks were noticed, the largest flowing almost due east along the chord between sections 19, 30, &c. The water in these brooks is only slightly alkaline, hardly perceptible to the taste. No water powers exist. Frosts occurred several times during the month of September, and at this writing (October 3) snow is falling. For fuel there is wood in large quantities. There are no stone quarries or minerals. Large numbers of moose and bears are found. Partridge are very plentiful.—*H. B. Proudfoot, D.L.S., 1904.*

Range 26.

Township 10.—In this township is situated the town of Virden, a station on the main line of the Canadian Pacific Railway and from it any section in the township can be reached. The soil of this township varies, from a poor sand to a deep rich loam; most of the sections, however, are cultivated and mixed farming is carried on. The surface of the township is mostly open, gently rolling prairie as will be described below. There is no timber of any account in this township, with the exception of a bluff of small poplar measuring up to about six inches in diameter located on halves of 10, 11 and 12. The source of the water supply of this township is Bosshill creek through section 25. Hay of a good quality exists on sections 1, 2, 3 and south halves of 10, 11 and 12. The source of the water supply of this township is Bosshill creek, which flows through sections 19, 20, 17, 16, 15, 14, 23, 26 and 25. This water is fresh. A small creek flows northerly across the east half of section 4. There are no water powers in this township. No stone quarries and no indications of minerals were found. The fuel used is mostly coal, which can be procured in the town of Virden. The only game is prairie chicken. The climate is very good. There were no reports of summer frosts. Sections 1 and 2 are open, nearly level meadow lands; there are a number of sloughs on these sections and hay may be cut. Section 3 is meadow lands to the north; the south half is open, nearly level prairie. Sections 4, 5, 6, 7, 8 and 9 are open, gently rolling prairie. Sections 10, 11 and 12 are meadow lands in their south halves; the north halves are open, nearly level prairie. Section 13 and east half of section 14 are nearly level. Small poplar and willow scrub occur in the northern parts of these sections. The west half of section 14 and sections 15, 16, 17, 18, 19 and 20 are open, gently rolling land. The north halves of sections 14, 15, 16 and 17 are broken by Bosshill creek, which also diagonally crosses section 20 and the north half of section 19. Section 21 is open, gently rolling prairie. Section 22 is gently rolling. The town of Virden is situated about the centre of this section. Section 23 is rolling; it is broken by Bosshill creek and is covered with considerable scrub. Section 24 is gently rolling in its west half and southeast quarter. There is some small scrub on the south half. The northeast quarter is broken by the slope leading to Bosshill creek. Considerable scrub grows on this slope. Section 25 and east half of section 26 are broken by Bosshill creek. Considerable scrub grows throughout

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the ravine of the creek and in the northeast quarter of section 25. There are loose stone on the north half of section 25. The west half of section 26 and sections 27, 28, 29, 30, 31 and 32 are gently rolling, open prairie. There are small patches of scrub on the east half of section 31 and the west half of section 32. Sections 33, 34 and 35 are open, nearly level prairie. The west half of section 36 is gently rolling. Considerable scrub grows on this half. The east half is very rough and broken by ravines, some of them containing scrub. No traces of the old Fort Ellice trail were observed. The Canadian Pacific railway crosses this township in a northwesterly and southeasterly direction passing through sections 12, 11, 14, 15, 22, 27, 28, 29, 32 and 31. Grading has recently been done through the east halves of sections 4, 9 and 16 on the proposed branch of the Canadian Northern railway leading to Virden.—*L. T. Bray, D.L.S., 1904.*

• Township 21.—This township is situated about 20 miles north of Solsgirth on the Northwestern branch of the Canadian Pacific Railway and about eight miles northeast of the village of Rosburn, where there is a post office and several general stores and through which a branch of the Canadian Northern railway passes. This branch will pass close to the southern boundary of this township and will therefore render it very easily accessible by rail, as it is already by wagon trails from Rosburn, Solsgirth and other points. The soil of this township consists of a rich black loam, varying from 6 to 18 inches in depth, with clay subsoil, and is well suited for general farming purposes. The surface of this township, or rather the eastern half, which only was surveyed by me, is of a rolling rather than a hilly character and is chiefly covered by poplar and willow scrub, although big poplar timber occurs upon some sections, notably numbers 1, 10, 11, 15, 22, 23, 24 and 36. This township though not very abundantly provided with natural hay, yet contains many small hay marshes scattered throughout the various sections of the township. Those noted being upon sections 1, 3, 10, 11, 12, 13, 14, 15, 22, 27 and 36. Several lakes of considerable size occur in the eastern half of this township, the largest being upon section 3 and covering the greater portion of same. Other smaller lakes are found upon sections 12 and 13, 11 and 14, 22, 25, 34 and 35. All of these lakes consist of fresh water. That upon sections 34 and 35 is said to contain an abundance of good fish. No water power occurs upon this township. The climate of this township must be such as to admit of the successful raising of wheat, oats and other ordinary farm products of that district since upon the western portion of the township, several very fine farms were observed to be in a high state of cultivation and producing excellent crops of grain. An abundant supply of wood for fuel exists everywhere throughout the township in the poplar forests which cover its surface. No stone quarries are known to exist upon this township. No minerals of economic value are known to occur upon this township. The land being now pretty well settled, game is not as abundant as formerly, but it is still not an uncommon occurrence for moose and jumping deer to be seen, whilst prairie chicken are quite numerous. As before intimated, the timber of this township consists chiefly of poplar and willow scrub, although large poplars occur upon sections 1, 10, 11, 15, 22, 23, 24 and 36. The larger timber varies from 6 inches to a foot and a half in diameter.—*J. W. Tyrrell, D.L.S., 1904.*

Township 26.—The soil is generally a clay loam with clay subsoil, and when cleared it will be suitable for mixed farming. The surface is heavily timbered with poplar and spruce. The surface is rolling. In the lakes the water is very alkaline. No stone were seen suitable for quarrying, and no minerals were found.—*C. F. Aylsworth, D.L.S., 1903.*

Township 26.—The road from township 27, range 27, runs from Clarke's ranch southwesterly as far as Shell river; thence along the river valley until it joins the main road running to Grandview. The road is in good condition all the way to township 26, range 26. The soil is a clay loam four to twelve inches deep with a clay subsoil.

The surface is very rolling and uneven and covered with a light growth of poplar and willow scrub. A few patches of open country are found along the north side of Short creek and some spruce extends along the northern part of sections 13, 14 and 15. Hay meadows extend along each side of Short creek, from which about two hundred tons of very good hay might be cut. Valley river, which flows southerly through sections 12 and 13 is about fifty feet wide, from two to three feet deep and flows about four miles an hour. The water in it is very fresh and good. Short creek, which flows easterly through sections 7, 8, 9 and 10, is about six feet wide and two feet deep. The valley through which it flows is low and flat and covered in many places by muskeg and hay sloughs. The land, except in Short creek valley, is not liable to be flooded. No water power is available in the township. The climate is dry and liable to summer frosts. Spruce and poplar for fuel can be had in any part of the township, but no coal nor lignite exists. No stone for quarries nor minerals of economic value exist in the township. Partridge, prairie chicken and rabbits are plentiful, and a few deer are found in the northern part of the township.—*Charles Harvey, D.L.S., 1904.*

Township 38.—A wagon road from Bowsman station on the Prince Albert branch of the Canadian Northern Railway, passes along the west boundaries of sections 30 and 31. The road is not in good condition. The soil is principally sand with an alluvial deposit of black or sandy loam of varying thickness, and is a good light agricultural land. The surface of that part of the township which I had surveyed is timbered mostly with small poplar. There is a little fair-sized poplar near the railroad, but it is not of any extent. Hay can be cut around most of the sloughs and grass swamps, but there are no large hay areas. Woody river runs through this township, and several small streams empty into it, in all of which the water is fresh and good. No bad or alkaline water was found. There is no water power. Until the land is cleared and drained summer frosts will be very prevalent. The fall of 1904 was very open and free of storms. Wood is the only fuel available. No minerals or exposed rock exists. Moose and bear, beaver, otter, marten, lynx, prairie chickens and partridges are found in the township.—*H. B. Proudfoot, D.L.S., 1904.*

Township 39.—Birch River siding on the Canadian Northern Railway, Prince Albert branch, is situated on section 35 of the township, and by rail to that point is the best means of reaching the northerly part of the township. There is also a road from Bowsman station, on the same railway, to section 36, township 38, range 27, west, and from which place old railway tote roads lead to various parts of the southerly portion of the township. As a rule, the soil is poor and very light, sand in most parts, with a slight alluvial deposit. With the exception of a small area of prairie in section 24, this township is all timbered. Most of the timber east of the railway and in some parts of the westerly portion is small poplar with a few swamps of tamarac and spruce; while in the northwesterly portion some large poplar and cottonwood occur, and a few ridges covered with jackpine and several large areas of windfalls. There are no large hay marshes, but a few small swamps afford a limited supply of fair hay. Good fresh water is found in the numerous brooks, but still water is scarce except in the spruce and tamarac swamps. Sloughs are not numerous. There is no water power. Fine weather was experienced during the whole of the time of survey. Frosts are frequent in summer. For fuel there is wood only, but in large quantities. There are no minerals and no rock exposures. There are bears, moose, elk, prairie chickens and partridge, while indications of beaver were seen on Jackfish brook. The Prince Albert branch of the Canadian Northern railway crosses the township from south to north.—*H. B. Proudfoot, D.L.S., 1904.*

Township 40.—The Prince Albert branch of the Canadian Northern railroad passes through the easterly part of this township from south to north. Birch River siding is about half a mile south of the south boundary and Novra station is about two and a half miles north of the north boundary. There are some old logging roads

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leading westerly from an abandoned mill site in section 14, but they are impassable in summer. The soil is sandy—in some places clay—with a fair deposit of black loam on the surface and where not too much broken by hills and ravines it is adapted for raising all kinds of grain, although it could not be called a good soil. The whole of the township is timbered. East of the railroad and for about a mile to a mile and a half west of it the surface is undulating and rolling and timbered principally with poplar, balm of Gilead, birch, spruce and tamarac. The Porcupine mountains cut well into the north and west parts of the township causing the surface to be very broken and hilly. This part is timbered principally with spruce, jackpine, poplar and birch. The best of the spruce has been cut out, what is left being stunted and knotty. I understand that part of this township was included in a timber berth at one time. There are no large hay meadows and very few sloughs or grass swamps where hay can be cut. Numerous spring brooks take their rise in the foothills of the Porcupine mountains and flow easterly through the township. The water was fresh. No alkaline water was met with. The streams are not large enough to furnish water power. Frosts were experienced in this locality during the summer, but there is no doubt that with the clearing of the land and drainage they will disappear. There is wood in abundance for fuel. There are no stone quarries. There are no minerals. The following game was seen: moose, jumping deer and a few elk, bear and small fur-bearing animals, partridge and prairie chicken. Some few years ago a tornado visited this locality and laid down a belt of timber from one-half to one mile and a half in width across this township from east to west and extending into ranges 25 and 27. That part will be impassable until visited by fire.—*H. B. Proudfoot, D.L.S., 1904.*

Range 27.

Township 26.—There is a siding on the Canadian Northern Railway on section 32, township 25, range 27; from there trails lead northerly and northeasterly into this township, passing up through Shell river valley to the north boundary, and along, parallel to the railway, to the eastern boundary. The soil is sandy loam in the southwest corner; clay loam for the rest; some stony hills in the northeast. The soil is suitable for mixed farming. Surface is heavily rolling prairie in the southerly half, and scrubby in the north, with old stubs and windfall. There are fringes of spruce, tamarac and poplar around some of the ponds and lakes which are large enough for building logs and fence posts. Most of the sloughs are too wet for hay; a period of dry seasons would give much more than exists this season. Several lakes have good water; Shell river flows through the westerly half of the township, and Takwa creek through the easterly. Shell river, averaging 125 links in width and 2 feet deep, gives a sufficient and permanent supply all the year round for all purposes. No place was noticed suitable for water powers along this river in this township. The season was moderately dry, with some light frosts on and after August 20. Large quantities of old stubs and windfall for fuel may be procured in the north half of the township; the young growing poplar, in a few years, will supply sufficient for the needs of the township. We saw no rock in place; but plenty of boulders, both limestone and granite, exist in the north corner of the township. Partridge and rabbits are very plentiful. There were only two settlers resident, but many of the homesteads are taken up.—*John Francis, D.L.S., 1904.*

Township 27.—From township 28, range 27, we moved back over our old trail as far as section 16, where we found a road running southeasterly into township 27, range 27. This road goes around the east side of Clarke lake and then runs in a southwesterly direction as far as Shell river, where it joins Shell river road. The soil in this township is light and of poor quality. The surface is very rolling and uneven and covered with a heavy growth of poplar and willow scrub, with windfall and burnt

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timber in some places. Some spruce and black poplar, 15 to 20 inches in diameter, was found in the southeastern part of the township, but the best timber has been all logged out already. Many lakes and hay sloughs are to be found in all parts of the township. About six hundred tons of hay are available. A rancher by the name of Clarke, who lives on section 26, cuts all the available hay for wintering his cattle. A few small streams flow through the township and Shell river cuts across the southwest corner of it. The water in the lakes is fresh. The land is not liable to be flooded at any time of the year. No water power is available in the township. The climate is dry and subject to summer frosts. Spruce and poplar for fuel can be had in any part of the township, but no coal nor lignite exists. No stone for quarries nor minerals of economic value exist in the township. Moose and black bear, partridge, prairie chicken and rabbits are plentiful.—*Chas. Harvey, D.L.S., 1904.*

Township 28.—To get to township 28, range 27, from township 31 range 29, we had to come back over our old road as far as section 15, township 29, range 29, where we found a good road going in a southeasterly direction as far as Shell river, where there is a good ford. On the east side of the river there are old timber roads running in all directions, and we had no difficulty in finding a road leading into the centre of township 28, range 27. The soil in this township is light and of poor quality. The surface is very rolling and uneven and covered with a heavy growth of poplar and willow scrub, with windfall and burnt timber in some places. Some spruce and black poplar 15 to 24 inches diameter were found in the northeastern part of township, but the most of the good timber has already been removed. There is no hay of any account in this township. A few streams of very good water flow through the township and many lakes are to be found in all parts of it. The water in the lakes is fresh, and in Angling lake pike and mullet are plentiful. The land is not liable to be flooded. No water power is available in the township. The climate is dry and subject to summer frosts. Spruce and poplar for fuel can be had in any part of the township, but no coal or lignite exists. No stone for quarries nor minerals of economic value exist in the township. Moose and black bear, partridge and rabbits are the only game found. In sections 24, 25, 26, 35 and 36 some spruce and black poplar 15 to 24 inches diameter exist. These would supply building logs for settlers or a limited quantity of timber for lumber could be got from them, but the best of the timber has already been removed. A few spruce are to be found also in swamps in different parts of the township, but they are only 6 to 10 inches diameter.—*Charles Harvey, D.L.S., 1904.*

Township 34.—We left Swan river on May 9 and followed a settler's road in a southerly direction keeping to the east side of Roaring river, which we crossed on a good bridge about the north boundary of section 33, township 35, range 27, west of the principal meridian. The road was in good condition for the time of year, and we had no difficulty in reaching our work on the same night. Our first camp was in section 20 by the side of a small stream of very good water. The soil, generally speaking, is very well suited to agriculture, having a depth of from two to ten inches of black clay loam with a heavy clay subsoil. The first twelve sections, however, are somewhat hilly, and in some places rather stony. The whole township, with the exception of a few acres west of Roaring river, is covered with young poplar and willow scrub, with considerable large dead standing and fallen timber, killed by the fire which went through about six years ago. The only live timber of any size is a spruce bluff of about fifty acres extent which extends along the east boundary of section 24. In this bluff the spruce are from eight to thirty inches in diameter. There are not enough of them, however, to make it of any value as a timber limit, although some fine logs for building purposes might be got here. There was no hay land at all nor even grass for the horses. We had to get hay from the nearest settlers to feed the horses. The water is fresh and there are a number of small streams which would supply enough water for the stock and for house use of farmers. Roaring river, which flows through the western side of the

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township, is a swift-flowing stream about a chain wide and two feet deep. In spring it contains abundance of pike and mullet, and the water is fresh and good. It has no falls or rapids from which power could be developed and the fall of the stream is too gradual and the valley too wide to develop power by construction of dams. There is considerable rainfall and the climate is well adapted for grain growing, although occasionally the older settlers tell me they have frosts in August which damage the crops to some extent. No coal or lignite veins exist, but there is abundance of dry dead standing timber for fuel at present, and in a few years the young poplar will be large enough for use as fuel. There is no rock of any kind that would do for stone quarries. In some places there are a great many granite boulders and also some limestone boulders which the settlers burn to get lime for building purposes. No minerals of any kind exist in the township. Game is very plentiful. Moose and jumping deer were seen almost every day by some of the men. Black and brown bear are also found occasionally. Partridge and rabbits are also very plentiful, also an occasional prairie chicken.—*Charles Harvey, D.L.S., 1904.*

Range 28.

Township 22.—The regular centre meridian road allowance through this township leads into the village and station of Russell, Manitoba. It is more or less improved and graded by the municipal corporation of Shell River. The soil is mostly a black loam, resting on a clay subsoil, admirably adapted for grain raising. The surface is gently rolling, mostly prairie, interspersed with bluffs of poplar and willow scrub, presenting a beautiful park-like country. No timber of any value now remains, but if no fires are allowed to run, in a few years some of the bluffs will supply fuel. No hay sloughs of any extent exist. All the water is fresh and good. Shell river touches the township on the north boundary of section 32. A small creek crosses the township from east to west, but will dry up during the summer. There is no land liable to flooding. No water powers exist. So far this season the regular Manitoba weather prevailed. There is at present very little fuel in the township, wood may be procured north and northwesterly in the adjoining township. No coal or other minerals have yet been found. Some gravel and boulder stones may be had on section 31. Duck and prairie chicken are plentiful. This township is fairly well settled and raises large quantities of grain and stock. Not a single monument existed to show the numbers of sections, save and except the iron bar on the correction line governing the northwest corner of this township.—*John Francis, D.L.S., 1904.*

Township 23.—The main road from Russell to Tumbell and Goose lakes, passes northerly through this township; it is more or less improved by the local authorities, thus giving easy access to any part of the township. The soil is in general first class, except along the crests of the valleys, where it is inclined to be stony. The surface is gently rolling, except where broken by valleys of Bear creek, Shell and Assiniboine rivers; these latter making the land hilly. Some poplar trees fit for building logs may be got along the western side of Shell river valley, especially adjoining the central meridian of the township. No hay sloughs of any size are to be found. All water is fresh and good. Shell river traverses the township from north to south, dividing it nearly equally. Bear creek coming from the east along or near the north boundaries of sections 1 and 2, joins the former near the south boundary of section 10. There is considerable wood fit for fuel growing along the sides of the valleys and lateral ravines, that are to be found in the township. These places are not fit for much else being very sloping. The current of Shell river is very rapid in places, affording plenty of head for water powers no particular place was noted superior to the several which abound. No coal or other minerals have yet been found. Plenty of granite and limestone boulders may be got along the valley of the river. A few deer and bear were seen, but no other game. A good many settlers are living in this township. East of

Shell river nearly all the monuments have been destroyed by the fires which have taken place since it was first surveyed.—*John Francis, D.L.S., 1904.*

Township 24.—A good trail, improved along the road allowance in places, leading from Russell on the Canadian Northern Railway to Roblin, on the Canadian Northern Railway, gives easy access to this township. The soil is mostly a black or clay loam on a clay subsoil, suitable for the raising of grain or mixed farming. The surface is rolling, except along the valleys of Assiniboine and Shell rivers, where it is more or less heavily sloping. This township is largely prairie and scrub equally intermixed. There is no timber in this township. There is very little hay, but all the sloughs and ponds are liable to dry up. Shell river gives a permanent supply of fresh water at all times. This river, averaging one chain in width and two feet in depth, with a current three miles per hour, gives a volume and strength of current sufficient for the running of sawlogs, in the early summer season, for which it has been utilized more or less for some years. The land along this river is subject to flooding only at extremely high water, and then only for a short time. There were no water powers observed. The usual Manitoba summer prevails, inclined to be slightly drier and cooler than ordinary. There are no summer frosts. Plenty of young growing poplar scrub in bluffs more or less on every section will, in the future, give plenty of fuel if not too much fire-killed. There is no coal. No stone quarries exist, but there are plenty of boulders along the valleys of Shell and Assiniboine rivers. There were no minerals observed. There was not much game seen while surveying this township. This township is largely taken up and the western half is well settled.—*John Francis, D.L.S., 1904.*

Township 25.—Trails from Roblin station, section 8, township 26, range 28, on the Canadian Northern Railway lead south and southeasterly into this township, giving easy ingress to any part of it. The soil is mostly a clay loam, suitable either for grain growing or mixed farming. The surface is rolling, except along the valley of Shell river, where it is broken into steep slopes. Scrub alternates with open places or prairie all over the township. There is no timber of any kind. There are a few sloughs. Hay is not very plentiful. Some half dozen lakes in the north half with Shell river are all fresh and good water, and give a plentiful supply at all times. Shell river, about one chain wide and the depth varying as to the season, has a current of from three to four miles per hour. The flats along its banks are not subject to flooding, except occasionally in the spring after a heavy winter's snowfall. No place naturally fitted for water power was noticed, but by dams the fall and volume of water in Shell river might be utilized for small power purposes. The season is drier and cooler than ordinary. Plenty of young growing scrub, if not fire killed, will give considerable fuel in a few years. There is no coal. There are no stone quarries, but there are plenty of boulders along Shell river valley. No minerals were observed. Duck, chicken, partridge and rabbits are plentiful. Homesteads are all taken up and mostly settled on the west side of the river. The Canadian Northern Railway passes through sections 25, 26, 27, 33, 34 and 36.—*John Francis, D.L.S., 1904.*

Township 26.—Roblin station on the Canadian Northern Railway is in section 8 of this township, from there trails radiate in all directions. The soil is mostly class 1 and 2, a clay or black loam on a clay subsoil, and will be suitable for raising grain, of which some has been grown by the present settlers. The surface is rolling. The west half of the township is mostly open prairie, the east half has considerable scrub. There is no timber of any size, but plenty of young growing poplar on the eastern two tiers of sections. Hay sloughs are numerous, and many of the wet ones could easily be drained. All water is fresh, mostly in ponds, sloughs and lakes. There are no streams and no water powers. There were some light frosts on and after August 20. Considerable young poplar, fit for firewood, may be procured on the east half of the township. There are no stone quarries, but plenty of boulders for the requirements of

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settlers exist. No minerals were seen. Partridge, duck, prairie chicken and rabbits are plentiful. All the homesteads are taken up in this township.—*John Francis, D.L.S., 1904.*

Township 27.—This township can be reached by a good trail from Roblin, a small village located on the Canadian Northern Railway, township 26, range 28. The western half of this township is of a second class for farming purposes. The land is gently rolling with a subsoil of black loam quite suitable for grain growing, and at present produces a dense growth of wild peas in the openings. During the year 1903 and 1904 all the good available land for homesteading has been squatted upon in this township. The western half of the township is badly broken by Shell river, the valley of which averages about a mile in width and two hundred and twenty-five feet deep. The river enters the township in section 36, passes through section 35, 26, 27, 22, 15, 10, 11, 14 and 13. Throughout the river valley in this township there is considerable prairie, but it is mostly of a third class, being somewhat gravelly and stony. There are no hay meadows found in the valley. That portion of the township lying to the east of the river valley is quite rolling and inclined to be rough. The soil is of a much poorer class than the eastern half. Forty per cent of the township is covered with poplar, and willow scrub, while twenty per cent is covered by young poplars up to four and five inches in diameter and is distributed somewhat evenly through the township. Small sloughs are somewhat numerous, but there is only a moderate amount of hay to be secured. The water found is fresh and somewhat permanent. Shell river contains good water and has an average cross section of one hundred and forty square feet at a rate of one and one-half miles per hour. There are no water powers along this river. From general indications the summer season is short but growth is rapid, being aided by the dense heavy dews, which are quite prevalent during July and August. Summer frosts may occur but do no damage. Fuels, other than poplar wood, are not available within the township. There are no stone quarries, neither are there found minerals of economic value. There is no game other than a few duck and prairie chicken.—*R. H. Knight, D.L.S., 1904.*

Township 28.—This township can be reached by a good trail from Roblin, a small village located on the Canadian Northern Railway in township 26, range 28. The western half of this township is of a second class for farming purposes. The land is gently rolling, with a soil of black loam of good depth and quite suited for grain growing. At present the openings are producing a dense growth of hay and wild peas. The eastern half of the township is badly broken by Shell river, the valley of which averages about a mile in width and two hundred and twenty-five feet in depth. The river enters the township in section 34, passes through sections 35, 26, 25, 24, 13, 12 and 1. Throughout the river valley in this township there is considerable prairie, but it is of a third class, being somewhat gravelly and stony. The lands lying between Shell river and the centre meridian of the township are quite rolling and inclined to be rough. The soil is of a poorer quality than that of the western half of the township. A few quarters are second class, but fully seventy per cent is third class. This township is about eighty per cent covered by poplar and willow scrub or poplars up to five inches in diameter. There are but few openings wider than twenty chains. A large quantity of hay is produced in this township, the best of which is from sections 7, 8, 9, 10, 15, 16, 17, 18, 19 and 20. Sections 2, 3, 4 and 5 are covered with poplars up to five inches in diameter, and also seventy-five per cent of sections 9, 10, 11, 14, 15, 22, 23, 30, 27 and 28 are likewise covered. There are numerous sloughs, most of which grow hay. The depth of water contained ranges from one to two feet; a few are four feet and deeper. Very few are dry. The water is fresh and apparently is permanent. Shell river water is first class. This stream has an average cross section of about one hundred and forty square feet, at a rate of one and one-half miles per hour. It contains no water powers of commercial value. From general indications

the summer seasons are short, but growth is rapid, being aided by the dense heavy dews, which are quite prevalent during the months of July and August. These dews often keep the heavy growth of hay and peas damp until midday. Summer frosts may occur but do no damage. Fuels, other than poplar wood are not available. There are no stone quarries, neither are there found minerals of economic value. Game is apparently scarce. A few duck and prairie chicken appeared in this township, these being the first seen during the season.—*R. H. Knight, D.L.S., 1904.*

Township 29.—This township can be reached by a good trail from Roblin, a small village located on the Canadian Northern Railway in township 26, range 28. This township is badly cut up by Shell river, the valley of which averages about a mile in width and 225 feet in depth. The river enters the township in section 36, passes through sections 35, 26, 27, 22, 21, 28, 29, 20, 19, 18, 17, 8, 9, 5, 4 and 3. From the main valley of Shell river numerous small ravines run inland for a distance of a mile, and from the influence of the presence of this river valley with its ravines fully 70 per cent of the township is rendered too rough for economical grain growing. There are numerous prairie openings within the river valley which make excellent grazing ground, but none are producers of hay. That part of the township lying to the south, west and north of Shell river is the most open part, but it is quite hilly and covered with considerable poplar and willow scrub, together with scattered poplars up to 6 inches in diameter. The soil is inclined to be of a poor quality. That part of the township lying to the east of the river is generally level or gently rolling, but is covered with a thick growth of poplars from 3 to 7 inches in diameter. There are numerous sloughs, swamps and small lakes and as a whole that portion of the township is quite wet. Spruce and tamarac up to 10 or 12 inches in diameter grow on most of the swamps. Sections 14, 15 and 16 contain considerable spruce, but this is not valuable because the best timber has been taken off and nothing but culls remain. The water in lake No. 2 is somewhat alkaline. At present, it has no outlet and the existing high water mark is fully 3 feet lower than the bed of the old outlet some 10 or 12 years old. The inlet is irregular, being but the overflow at high water from lake No. 5. All lakes excepting No. 2 contain good fresh water, as does Shell river. At low water, Shell river has an average cross section of about 140 sq. feet at a rate of $1\frac{1}{2}$ miles per hour. There are no water powers along this river. From general indications, the summer season must be short, but growth rapid. Light summer frosts occurred. Fuels, other than the various kinds of woods above mentioned, are not apparent. There are no stone quarries, neither are there found minerals of economic value. Game is apparently scarce. Shell river contains fish that are common to all Manitoba rivers. Lake No. 2 until about 4 years ago, contained fish in abundance, but at present none are to be found.—*R. H. Knight, D.L.S., 1904.*

Township 30.—The most accessible route to this township from any railroad is from Roblin, a small village, on the Canadian Northern Railway, in township 26, range 28. From Roblin a good trail runs to within a few miles of the township. This township is suitable only for mixed farming, and is of a third class for such a purpose, the tillable soil averaging a poor quality. The western half of the township is somewhat open, but is quite hilly and inclined to be gravelly, while the eastern part is covered by poplar, spruce and jackpine bush, and is badly broken by numerous swamps and muskegs, together with Shell river and its many adjacent ravines. The best timber is found in sections 24, 25, 36 and 31, and is principally spruce of a good size and quality. In sections 9, 10, 15, 21 and 22 there is much swamp land which is timbered with spruce up to 12 or 14 inches diameter with some tamarac. All the timber of this township is included in the Hanbury timber limits, and the best timber is being cut. Shell river valley does not produce hay as would be expected, and but little grows elsewhere in the township. Fresh water is found in an abundance in many small lakes and creeks. Shell river has an average cross-section

of about 140 square feet flowing at rate of $1\frac{1}{2}$ miles per hour at low water. This river is very crooked and has numerous rapids. At a great expense a small water power could be developed, but the apparent natural resources of the surrounding country do not warrant the development of such power. There were two light frosts during the month of July. The nights are always cold, and from general indications early fall frost might be expected. The only fuel available is poplar, spruce and tamarac wood, of which there is abundance. Stone quarries and minerals of economic value are not apparent. Deer and black bears are quite abundant. The bear at times becoming an annoyance about camp. Fish similar to those found in the rivers of Manitoba are plentiful in Shell river, also in lakes Nos. 1 and 4.—*R. H. Knight, D.L.S., 1904.*

Township 31.—The most accessible route to this township is from Roblin, a small village in township 26, range 28, and located on the main line of the Canadian Northern railway. From Roblin a good trail runs to within six or eight miles of the township. Along the western side of township 30, range 28, there are openings enough to get through without cutting a road. Township 31 is useful only to the lumberman. Where large timber does not exist, a dense growth of small poplar accompanied with windfall and hazel is always to be found. The township, being so extremely rough, is quite useless for any class of farming, even if it were cleared. Sections 7, 8, 16, 17, 18, 20, 21, 22, 27, 28 and 29 are rough beyond description. Spruce timber of a second and third grade and ranging from one to three feet in diameter is found on sections 5, 6, 7 and 8; from 1 to 2 feet in diameter on sections 15, 16, 17, 20, 21, 22 and 28. The remainder of the sections throughout the township contain considerable spruce to 18 inches diameter, but is somewhat scattered and chiefly found in swamps and muskegs. The timber of this township is included in the Hanbury timber limit and is being cut. Small creeks or lakes containing good water are frequent, but hay is not to be found, not even in the valley of Shell river as might be expected. From general indications, the summer season is short. Frost remained in the ground until the middle of June, and summer frosts are frequent. Fuels, other than wood, are not apparent. There are no stone quarries, neither are there minerals of economic value to be found. Moose are very plentiful and are the only game that survive.—*R. H. Knight, D.L.S., 1904.*

Township 32.—From Pretoria post office, situated on section 31, township 33, range 28, there is a good wagon trail to the town of Swan River. A branch of the Canadian Northern Railway from Swan River via Pretoria is now under construction. From Pretoria southward through township 33 there is but a poorly constructed surveyor's trail through the bush. There is no prairie to be found in township 32, range 28, and very little scrub. Sections 25, 26, 35, 36, 28, 29, 32 and 33 contain the lightest bush and is the easiest portion to be cleared. The north half of the township is rough, rising towards the south about 300 feet (to almost the summit of Duck mountains). The northern slope is covered by poplar up to four inches diameter with great quantities of dead spruce trees or windfall, which is in many places almost impassable. Upon the southwest portion of the township is a great deal of spruce up to 6 inches diameter mostly scattered through the growth of young poplar. On sections 19, 20, 16, 17 and 18 there is a large quantity of spruce up to 24 inches diameter, though somewhat scattered and broken by small swamps and muskegs. This timber is contained in a timber limit held by Mr. Hanbury, a lumberman. Sections 14, 15, 22, 23 and 24, are composed of considerable swamp and muskeg lands, covered with small spruce and tamarac up to 12 or 14 inches in diameter. The land, generally, is rolling and inclined to be rough or broken by spruce swamps. There is abundance of good water, obtainable from numerous small streams throughout the township. There are few sloughs or hay marshes. The soil is good, and if once cleared would be easily worked and quite suitable for mixed farming. Frosts at the date of survey (May) were quite frequent. Small sloughs were covered by ice on May 22. The only fuel obtainable is the wood upon the land. There are no water powers, stone quarries or economic minerals. The only

game found is moose and black bear. These are in abundance and quite tame.—*R. H. Knight, D.L.S., 1904.*

Township 33.—After finishing township 34, range 27, we followed a settlers' road back to section 32, where we found a very good ford across Roaring river. Thence we went south through fairly open country as far as the west boundary of section 6. It was necessary to go this far south before turning west in order to get around a long stretch of marshy land over which we could not go with the wagons. In section 6 we found an old trail going west which we followed for a mile and a half, when we came across a lumber trail going up to Sara lake. This trail we followed into section 34, township 33, range 28, where we camped. The road, with the exception of a few soft places, was fairly good. The soil is not rich, there being only about two inches of clay loam, with a heavy clay subsoil, but with proper treatment it would be suitable for agricultural purposes. It is covered with a growth of young poplar with a willow scrub and burnt timber except in sections 23 and 14. These sections have some spruce of fair size (eight to sixteen inches), and, together with the timber that is in the other parts of the township around Sara lake, would be worth reserving for a small timber limit. There is a sawmill at Sara lake which supplies the country to the north of there with lumber. There are a few hay sloughs, but generally speaking hay is very scarce. With the exception of two or three small streams, good water is scarce, although it could probably be had by digging. The land is high and not liable to be flooded. There are no streams large enough for the development of water power. The climate is moist and suited to grain growing, although occasionally summer frosts occur. Dead timber for fuel can be had in any part of the township, but no coal, rock for stone quarries, nor rock of any kind, exist. Deer, moose and bear are plentiful, and rabbits and partridge are in abundance.—*Charles Harvey, D.L.S., 1904.*

Range 29A.

Township 27.—The soil in this township is of excellent quality, except in the extreme south end where sections 11, 12, 13 and 14 are broken by Boggy creek ravine. The greater portion of the land in this township was scrubby prairie. There was no timber worthy of mention. I do not believe there would be much more than would suffice for temporary fencing and one winter's supply of wood. There is scarcely any available hay. Only a small percentage of the water is alkaline and a permanent supply of good water may be had in abundance by going down from twenty to forty feet. There are no stone quarries nor economic minerals.—*C. F. Aylsworth, D.L.S., 1903.*

Township 28.—The soil in this township is excellent, except in the north end where the surface is somewhat damaged by some large muskegs and sloughs. There is no timber worthy of mention. There are no stone quarries. There are no economic minerals. There is very little available hay.—*C. F. Aylsworth, D.L.S. 1903.*

Township 29.—This township is easily reached by a good trail from Roblin, a small village on the main line of the Canadian Northern railway and in township 26, range 28. This township is but one mile and a quarter wide. It is mostly covered with young poplars up to 5 inches in diameter or poplar and willow scrub. Sections 13 and 24 are the best sections for farming purposes. The land is gently rolling and soil mostly black loam with a clay subsoil. These sections have a few prairie openings. On sections 1 and 12 there is considerable wet land, large sloughs or muskegs, together with a thick growth of young poplars. There are also a few swamps with young tamarac and spruce. Sections 25 and 36 are inclined to be rough and are covered with young poplars up to 4 inches diameter. The soil is poor, being generally a light sand loam or gravel. The summer season is short but growth is rapid, being aided by the dense heavy dews of July and August. Light summer frosts occur. There are no

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fuels available other than the woods mentioned above. No stone quarries nor minerals of economic value are found. Game is scarce, there being but few duck and prairie chicken.—*R. H. Knight, D.L.S., 1904.*

Township 30.—This township is easily reached by a good trail from Roblin, a small village in township 26, range 28. This township is but one and a quarter miles wide. It is quite rough throughout and covered by poplar bush or scrub. The soil is light and is not a grain producer. There are numerous small sloughs and marshes but no hay meadows. The only available fuel is poplar and spruce. Sections 35 and 36 contain considerable spruce bush, which is included in the Hanbury timber limit. Stone quarries or minerals of economic value are not found. The summer season is short and light summer frosts occur. The only game of importance in this township is the jumping deer and the black bear.—*R. H. Knight, D.L.S., 1904.*

Range 29.

(Part) Township 25.—This township is easily reached by a good trail from Roblin, a village on the main line of the Canadian Northern Railway, in township 26, range 28, or by a good trail from Russell, a town on the Canadian Pacific Railway about thirty miles southward. Assiniboine river, running through sections 32, 29, 26, 17, 8, 5, 4, 3 and 2, makes these sections useless for grain growing. On the other hand some portions of the river valley are excellent hay producers. The best portions being that part of section 3 lying to the south of the river and in the valley; those portions of sections 4 and 5 lying to the north of the river; that portion of the north half of section 17 lying in the river valley; the east half of section 20, together with that portion of the southeast quarter of section 29, which lies to the east of the river. The west half of sections 31 and 7, together with sections 30 and 6, are about the only portions of apparently good lands contained in my work, namely, the western two tier of sections and sections 2, 3, 4 and 9. Poplar bush ranging from five to ten inches in diameter is found as follows: Upon the side-hill contained in the east half of section 2, on the side-hill of those portions of sections 4 and 5 lying to the south of the Assiniboine river; and on the side-hill to the west of the river throughout the township, excepting that portion of side-hill on the southwest quarter section 20 and the northwest quarter section 29. The ravines on sections 18 and 19 are also covered with large poplar trees. The climate is considered equally as good as most settled portions of Manitoba. If summer frosts occur they are light and do no damage. The only available fuel is poplar wood, of which there is a lasting supply if protected from prairie fires. Minerals and stone quarries of economic value are not found. The only game in the township is prairie chicken and deer, both of which are scarce.—*R. H. Knight, D.L.S., 1904.*

Township 26.—This township is easily reached from the village of Roblin by a good graded road, which enters the township along the north boundary of section 1. Roblin is but six or eight miles from the centre of this township, and is located on the main line of the Canadian Northern railway. This township is badly broken by Assiniboine river and by Big Boggy creek, whose valleys are from one to one and a half miles in width, and from two hundred and fifty to three hundred feet deep. Fully one-third of the township is rendered useless for farming by these valleys. About one-sixth of the sections of the township is occupied by recent settlers and a few sections are patented and unoccupied. The best quantity and quality of land is that portion lying south of the creek and east of Assiniboine river. The soil ranges from a black loam to a rich clay loam. The lands lying to the north of Boggy creek are of a second quality but are covered by considerable scrub and large poplar. Throughout the township the land is generally level or gently rolling. The southeast quarter of the township is mostly covered by poplar and willow scrub, with poplars up to three inches in diameter. Sections 8 and 17 are somewhat gravelly and mostly prairie. Sections 21, 28, 29 and 5,

are covered with large poplars from six to ten inches in diameter. The only hay found is in Assiniboine river valley, the most of which is on sections 6, 18 and 19. The Assiniboine, during the spring floods, rises some ten or twelve feet, and thereby floods the whole valley at many points. Water is apparently scarce, other than the streams above-mentioned. There are not more than a dozen sloughs throughout the township. Bodies of water which were considered small lakes a few years ago are no longer such but have dried up considerably and are now turned sloughs. The settlers obtain good water from wells at a depth of about twenty-five feet in many places. The climate is considered equally as good as any part of Manitoba. If summer frosts occur they are very light and do no damage. There are no water powers. The only fuel available is poplar wood. Economic minerals and stone quarries are not apparent neither is there any game other than prairie chicken, of which there are few.—*R. H. Knight, D.L.S., 1904.*

Township 29.—From section 27, township 29, range 30, we followed the Shell river road up the valley of Little Boggy creek as far as the north boundary of section 26. Here we bridged the creek and cut a road easterly as far as the southwest corner of section 32, township 29, range 29, where we made our first camp. We had considerable difficulty in getting up the south bank of the valley of the Little Boggy with the outfit, as the valley is very deep here and the banks very steep. Otherwise the road is in fair condition. From this camp we cut a road southeasterly across sections 29 and 28, southerly through section 21 and easterly through section 15, making our second camp in the northeast quarter of section 15. The soil for the most part is a clay loam 4 to 12 inches in depth with a clay subsoil. It is very rich in quality and is suitable for agricultural purposes. The surface in the northern part of the township is very uneven and much broken with sloughs and muskegs. It is covered with poplar and willow scrub and windfall. In the southern half of the township the surface is gently rolling and is about half prairie, the remaining part being covered with scattered poplar trees 6 to 12 inches diameter with poplar and willow scrub. There are a few small spruce bluffs in the western tier of sections with spruce 10 to 15 inches diameter, but these are not extensive enough to be valuable as a timber reserve, although a number of fine building logs could be secured here. Many large hay sloughs exist in the two southern rows of sections. The hay is of good quality and would yield about 100 tons per section. There are many lakes in the township and the water in them is fresh, but the streams are small and mostly dry up during the summer season. There is no water power available in the township. The land is not liable to be flooded except in the hay sloughs. These are flooded to a depth of about 2 feet in the spring but dry up during the summer. The climate is very changeable and summer frosts are very frequent. Wood for fuel may be had from any part of the township but no coal nor lignite exists. No rock for stone quarries exists nor any minerals of economic value. A few elk, moose and deer are to be found and many partridge, prairie chicken and rabbits.—*Chas. Harvey, D.L.S., 1904.*

Township 30.—To get to township 30 we followed our old road back as far as section 32, township 29, range 29, and from there we cut a road northerly into section 9, township 30, range 29, where we camped in the valley of Little Boggy creek. From this camp we surveyed the south half of the township and then made a road north into section 28, from which place we finished the township. The road, with the exception of a few short steep hills, is very good. The surface of the township is very uneven and covered with poplar scrub and windfall. The soil in the hollows is a clay loam 6 to 12 inches deep with a clay subsoil. On the ridges the surface loam has been worn off by the action of the weather and a heavy bluish clay is left. Sections 13, 24, 25 and 36 and parts of sections 26 and 35 have a heavy growth of spruce 10 to 20 inches diameter which would make a timber limit large enough to keep a portable sawmill going for several years. There is no hay in the township. The only stream of any size is Little Boggy creek, one branch of which has its origin in a series of muskegs

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in section 10, 11 and 12, the other branch rises in a lake in section 20. The two branches join near the west boundary of section 10 whence it flows west into section 8, thence southwest crossing the boundary in section 6. It is 6 or 8 feet wide and about 2 feet deep and flows about 4 miles an hour. There are a few other small streams but these dry up during the summer. The water in the lakes and streams is fresh, but the margins of the lakes are so boggy that cattle or horses could not reach the water. Good water may be had in any part of the township by digging wells. The land is not liable to be flooded at any time of the year. There is no water power available in the township. The climate is dry and summer frosts are very common. Tamarac and spruce large enough for fuel are to be found in muskegs in all parts of the township, but no coal nor lignite exists. We saw no stone for quarrying nor any minerals of economic value to be found in the township. A few deer, elk and moose are to be found and partridge and rabbits are abundant.—*Charles Harvey, D.L.S., 1904.*

Township 31.—From section 28, township 30, range 29, we made a good road north into section 27, township 31, range 29, where we camped near the southwest corner of the section. The soil in this township is a heavy gray clay with a few inches of surface loam in some places. The surface, which is rolling and uneven, is covered with poplar and willow scrub, except along the eastern tier of sections, which have a heavy growth of spruce 10 to 20 inches diameter. There are a few small hay sloughs, but not large enough to supply more than a few tons of hay. A few small streams flow through the township, but these dry up late in the season, and water is scarce, although it may be had by digging wells. No water power is available in the township. The climate is dry and subject to summer frosts during the whole season. Small spruce for fuel may be had from muskegs in many parts of the township, but no coal nor lignite exists. No stone for quarrying nor any minerals of economic value are to be found. The game consists of a few deer and elk with abundance of partridge and rabbits. In sections 13, 24, 25 and 36 and parts of 14 and 23 are some fine spruce 10 to 20 inches diameter. A belt of this spruce extends along the east side of townships 30 and 31, and the southern two miles of township 32 in this range. This belt of spruce would make a very fair timber reserve and would keep a small sawmill employed for a number of years. The rest of the township is covered with poplar scrub, with a few muskegs, in which are to be found spruce 4 to 6 inches diameter.—*Charles Harvey, D.L.S., 1904.*

(Part) Township 32.—There is a settlers' road running into the township through section 35. A branch of this road runs down into section 16 to a settler's house. From this house a hay trail runs into section 10. We followed this trail into the northwest quarter of section 10, where we camped. The road this far is in good condition, but is here cut off by a large slough. The soil in this township is a light sandy loam two to six inches deep. The surface is rolling, the ridges being somewhat stony and the hollows containing either sloughs or muskegs. Sections 2, 3, 10 and 15 are covered with small poplar and willow scrub with a few small spruce in some places. Sections 1, 11, 12, 13 and 14 are about half scrub and small poplar, the remaining half being covered with spruce and poplar from ten to sixteen inches in diameter. On sections 3 and 10, some hay sloughs are to be found from which fifty or sixty tons of very good hay might be had, but there is no hay of any account in the other sections. A few small streams of very good water were running in the early part of the summer, but these all dry up later on in the season, with the exception of one stream about five feet wide and two feet deep, which enters the township on the south boundary of section 3 and flows westerly into section 6, and thence northerly into Bearshead lake. This stream flows about two miles an hour; the water is good and the supply unfailing. Good water can be got in any part of the township by digging wells. There is no water power available in the township. The climate is dry and subject to rapid changes, and summer frosts are very common. Wood for fuel can be procured in any of the sections surveyed by

me in this township, but no coal or lignite exists. No rock for stone quarries nor any mineral of economic value was found. A few black bear are to be found and many partridge, rabbits and duck. Prairie chicken are also to be seen occasionally.—*Charles Harvey, D.L.S., 1904.*

Township 37.—When I received your telegram of November 23 last, ordering me to discontinue the subdivision of this township, I had then finished the survey of the western and northern limits and also the eastern limits of sections 2 and 11 of same township. The distance from this township to the town of Swan River is in the neighbourhood of twelve miles. The road leading thereto is fairly practicable. The soil of the township is generally composed of sandy clay of good quality and fairly adapted to the cultivation of all kinds of cereals. Said township is lightly undulating and appears to be thickly covered with poplar and spruce bush from ten to twenty inches in diameter. Much the greater proportion is poplar. There is very little hay, and where found was in the eastern part of the township. Woody river, having a width of about sixty feet and a depth of about two feet with a current of about two miles an hour, flows along the western limit of the township for two miles. Extending beyond its southern limit by about half a mile, it then follows this limit at a short distance from it, up to its eastern limit which it intersects very near the southeastern corner of said township. Another stream about twenty feet in width, having a depth of about six inches, with slow current, flows from north to south and traverses the township in its western portion and empties itself into Woody river. Many small streams were met but at the time the survey was made they were nearly all dry. Water is everywhere of good quality. The lands watered by these small streams do not appear to be submerged by the floods. There are neither falls nor rapids which would permit of their being used as water powers. The autumn has been remarkably fine. The first cold weather came with the first snow storm, on the last days of November. I have neither met with any stone quarries nor minerals of any kind. Game is scarce. We met moose and bear.—*J. F. Richard, D.L.S., 1904.*

Township 38.—I have made the survey of the four miles south of the western limit of that township and the survey of one mile of its eastern limit; that is to say the survey of the eastern limit of section 24. To reach this township from the town of Swan River, a distance of about twenty-four miles has to be covered. The first half of this route is fairly good; but the road bordering on the south and west limits of township 37, range 29, is hardly practicable for a rig half loaded. The soil, composed of a sandy clay, is of a good quality and appears to me to be favourable for the cultivation of all kinds of cereals. This township is heavy undulating, nearly mountainous especially in its eastern portion. It is heavily covered with a forest of spruce and poplar from ten to twenty inches in diameter. A few small streams of good water, having a width of from five to ten feet, and a depth of six to ten inches, flow here and there. There are no water powers, cascades nor rapids in the portions I have surveyed. The autumn has been very fine. The cold weather and snow started in about the end of November. I have neither met any stone quarries nor minerals of any kind. Game is scarce. We met moose and bear.—*J. F. Richard, D.L.S., 1904.*

Range 30.

Township 29.—From section 3, township 30, range 30, we cut a road southeasterly and camped in the valley of Little Boggy creek in section 27 of township 29, range 30. We had some difficulty finding a way down into the valley, as the banks are very high and steep for several miles each way from here. Even on the easiest grade we could find it was necessary to tie a long rope to the back of each wagon by means of which the men assisted the horses to hold the wagons back on the way down the hill. As the south bank of the valley was inaccessible to the teams, we had to survey the whole

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township from our camp in section 27. The soil in the part of this township which we surveyed is of poor quality, being, for the most part, a very shallow coating of clay loam with a clay subsoil and in many places stony. The surface is very uneven and in many places rough and hilly. The ridges and higher places are covered with poplar and willow, scrub and windfall, while the hollows are muskegs and sloughs with a few spruce from two to ten inches in diameter, some of which would make good building logs. There is no hay of any account in this part of the township. The water is fresh and abundant. Little Boggy creek is the only stream of any size. It is about fifteen feet wide and one to three feet deep. The current is about six miles an hour. It has no falls or rapids, but by the construction of a dam in section 36 about 50 or 60 horse power could be developed from it. The climate is somewhat dry and subject to summer frosts, making it difficult to grow wheat, although barley and oats might be grown successfully. There is a plentiful supply of fuel for present use in the dead timber which exists in nearly all parts of the township, and for future use the green timber around the edges of the sloughs and muskegs will afford an abundant supply. There is no coal or lignite. There is no rock for stone quarries nor any mineral of any kind. Bear, moose, elk, and jumping deer are to be found and partridge and rabbits are plentiful. The valley of Little Boggy creek, which runs diagonally across the northern part of the township, is a deep gorge with banks three hundred to four hundred feet, which are very steep and rough. Shell river road follows along the bottom of this valley. It is in good condition in this township, but in range 29 it is impassable on account of sloughs and soft places which it crosses. It is evidently a winter road and is not fit for summer use.—*Charles Harvey, D.L.S., 1904.*

Township 30.—From section 34, township 31, range 30, we cut a road around the east side of Madge lake, crossing the correction line on the south boundary of section 13 and entering township 30, range 30, through section 35. We made our first camp near the northeast corner of section 26. Thence, after surveying the northeastern part of the township, we cut a road around the south side of Madge lake to section 28, where we made our second camp. From this camp we surveyed the northwestern part of the township and then moved west into township 30, range 31, which we surveyed before moving southeast into section 7, township 30, range 30. From our camp in section 7 we surveyed the southwestern part of the township and then moved east to the northwest corner of section 3 from which camp we finished the township. The soil is of fair quality consisting of from two to six inches of clay loam with a heavy clay subsoil. The surface is rolling and in some places on the eastern and southern sides is rough and hilly. It is covered with a growth of young poplar from two to six inches in diameter with a few scattered spruce around the shore of Madge lake and in some of the muskegs. The sloughs, which are numerous, are surrounded by a dense growth of willow scrub. There is no hay in the township as the sloughs are too deep to dry up during the summer. There are two streams of fresh water flowing into Madge lake, one about fifteen feet wide and two feet deep flowing about three miles an hour, and the other about six feet and one foot deep, also flowing about three miles an hour. Both the above mentioned streams have abundance of pike and mullet in them during the early part of the summer. These two streams are the only ones that do not dry up during the summer. Good water can be had in any part of the township by digging wells. Madge lake extends along the northern side of the township. It is a beautiful lake with clear water and sandy and stony bottom, and is much frequented by the Indians of the Côté reserve, who come there on fishing expeditions. A very good wagon road runs from Côté to the southwestern side of the lake. There is no water power available in the township. The climate is subject to summer frosts making wheat growing very uncertain, although oats and barley are grown successfully in the neighbouring settlements. The green poplar which, when

cut and allowed to dry makes very good wood, is the only fuel to be had in the township. No coal, lignite, mineral, nor stone for quarries are to be found. Bear, moose and jumping deer are plentiful and partridge and rabbits are in abundance.—*Charles Harvey, D.L.S., 1904.*

Township 31.—From section 10, township 32, range 29, we cut a road through the bush past Mayer's ranch in section six as far as the north boundary of section 34, township 31, range 30, where we camped. We had some difficulty getting a road into this township on account of sloughs and muskegs which had to be crossed and which were too soft to hold the horses and loads from sinking. By putting a layer of willow brush about two feet deep across these places we got access with no more inconvenience than the loss of time involved. The soil in this township is rather poor in quality; about two inches of clay loam with a clay subsoil. The surface is somewhat uneven and covered with poplar from two to eight inches diameter. It is much broken up by sloughs, muskegs and lakes which are surrounded by a heavy growth of willow scrub. There are a few scattered spruce around the shore of Madge lake, but not enough to make a timber limit, although some good building logs could be got there. There is no hay in the township, the banks of the sloughs being too steep and the water too deep in them to dry up during the summer. The water in these sloughs gets very stagnant as the season advances, but the water in the lakes is fresh and good. A creek which flows out of Madge lake is the only stream of any size in the township. It is about fifteen or twenty feet wide and three or four feet deep and flows about three miles per hour. It has a stony and sandy bottom and the water is clear and fresh and abounding with pike and mullet. It does not dry up during the summer, but has not sufficient fall for the development of water power. The land is not liable to be flooded at any time of the year. This township, like all the land through Duck mountains, is liable to summer frosts, making it difficult to grow wheat, although oats and barley might be grown. The only fuel available is the poplar, which grows in every part of the township and which would have to be cut and allowed to dry before using. There is no coal or lignite in any part of it. No mineral nor fixed rock of any kind is to be found in the township. Bear, moose and jumping deer are plentiful and rabbits and partridge are in abundance. Madge lake, which extends across the southern part of the township, is a beautiful lake from three to four miles across, with a sand and stony bottom and beautifully clear, fresh water. There are many small islands in the lake most of which are covered with spruce. The shore line is very irregular and on the northwest side is low and swampy. On the east and south sides the shore is higher and is dry. Fish of the pike and mullet variety are very abundant in the lake and it is a favourable fishing lake with the Indians from Côté reserve. Two streams flow in at the south and one flows out at the north, all of which are full of fine pike and mullet. We found a very good boat on the south side of the lake which much facilitated the traversing of it.—*Charles Harvey, D.L.S., 1904.*

Range 31.

Township 24.—The southern part of this township can be reached by a good trail from either Saltcoats or Churchbridge. These towns are located on the Yorkton branch of the Canadian Pacific Railway. The soil of this township is a rich black loam from 4 to 20 inches deep and averaging about 10 inches throughout. The subsoil when found near sloughs is a sticky reddish blue clay. On the whole, the land is well suited for grain growing. The surface of the township is gently rolling or nearly level. A few quarters are class 1; the balance being class 2, or grading from 2nd to 1st class. Sections 16, 17, 20, 21, 27, 28, 29, 30, 31, 32, 33 and 34 are about 70 per cent covered with young poplars up to 6 inches diameter, with large willows; about 20 per cent poplar and willow scrub; the balance being small prairie openings

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about 20 acres being the largest opening. Sections 1, 2, 3, 4, 12, 13, 24, 25, 26 and 36 are prairie with a few small bluffs. The balance of the township will average about 50 per cent prairie, the greater part of which is adjacent to the last mentioned sections; the other 50 per cent being poplar and willow scrub up to 6 feet high. Hay grows in fair quantities, the most of which is to be had in the southern part of the township in the numerous dried sloughs. The water found is good. Sloughs are numerous. The water apparently is permanent, yet there seems to be many sloughs that have dried during recent years. There are no water powers, neither are there stone quarries or minerals of economic value. The climate is good. From general indications, summer frosts do not occur. Game is scarce, being confined to a few duck. There are about 25 homesteaders in this township, being Icelanders or Galicians. Nearly all the patented lands are now unoccupied and nothing remains but the ruins of old buildings.—*R. H. Knight, D.L.S., 1904.*

Township 25.—The southern part of township 24, range 31, is reached by a good trail from either Salcoats or Churchbridge. Through township 24, range 31, there are poorly made new trails into township 25. The soil of this township is a rich black loam of depths varying from four to twenty inches and averaging about ten inches throughout. The subsoil is a reddish blue clay and very sticky. If dry this quality of subsoil would be very hard to cultivate where necessary. On the whole the soil is very rich and is exceedingly well adapted for grain growing. The surface of this township is nearly level and if it were not for the numerous small sloughs and lack of drainage for wet seasons, seventy-five per cent of the land would be of class one instead of being class two, as is shown by the field notes. A few quarters are class three and twenty per cent is class one. Sections 3, 4, 5, 9, 15, 16, 17, 20, 21, 22 and 23 are covered with poplar bush up to five inches diameter. The balance of the township is covered with a growth of small poplars and willows from five to six feet high, such as is common to a heavy black soil. There is but little prairie that is over half a mile square, and but little bush that has not a few small openings of either prairie or light scrub which could be easily cleared. The most prairie and lightest scrub is in the north and north-east portions of the township. There is but a limited supply of hay to be had on account of there being so much scrub. What there is, grows in the recently dried sloughs. There are numerous sloughs yet to dry. The water found is good and apparently permanent, yet there seems to have been many sloughs dried during recent years. There are no water powers, neither are there stone quarries or minerals of economic values to be found. Poplar wood is the only fuel to be had. From general indications the climate is good and summer frosts do not occur. Game is scarce, being confined to a few duck on lakes Nos. 1 and 2. There are about fifty homesteaders in this township, all of whom are Galicians. Only 480 acres of land are patented, and is is not occupied.—*R. H. Knight, D.L.S., 1904.*

Township 30.—After cutting a road through the bush around the south side of Madge lake, in township 30, range 30, we came to a road in section 29 running from Madge lake to Coté. This is a road which has been cut out by the Indians who go to Madge lake on fishing and hunting expeditions. This road we followed into township 30, range 31, where we camped near the southwest corner of section 36, the road here becoming too soft to go any farther with our heavy loads. The land in this township is more or less rolling and is covered with small poplar and willow scrub, with a few prairie patches and many hay sloughs. The soil is a heavy clay loam from four to six inches deep with a clay subsoil. It is suitable for agricultural purposes but is much broken up by small sloughs. There is no timber of any size, the poplar being all less than four inches diameter. Hay sloughs are numerous in all parts of the township, but are small and many of them are wet in the centre, so that not more than fifty or sixty tons per section can be procured. The quality is good. The streams are all small, and dry up during the summer. The water is fresh and good while the streams are running,

but becomes stagnant later on. The land is liable to be flooded except where hay sloughs occur. These are flooded about two or three feet deep in the spring, but dry up during July and August. There is no water power available in the township. Summer frosts are frequent. On the night of June 22 came a frost heavy enough to form ice half an inch thick on water standing in pails at our camp, and between that date and July 5 several lighter frosts occurred, any of which was heavy enough to kill potato tops. The only fuel to be had in the township is the green poplar, which would have to be cut and allowed to dry, and in most parts even this is too small to use as fuel. No coal, lignite, mineral nor rock for stone quarries exists in the township. Bear are plentiful and a few deer are to be found. Rabbits and partridge are to be found in abundance.—*Charles Harvey, D.L.S., 1904.*

Range 32.

Township 35.—This township can be reached by a road leading from Yorkton to Fort Pelly. The road is sufficiently good to permit the transportation of an average load. The soil is composed of a sandy clay of good quality for the cultivation of all kinds of cereals. The surface is generally undulating. Wood can be found everywhere. This wood is poplar and spruce. The poplar averaging three to eight inches in diameter predominates. Spruce of about the same size, is found either scattered or in clumps, here and there. Poplar and willow brush is mixed with spruce and poplar, and can be found nearly everywhere. Hay can be found bordering the marshes and the streams; but the quality is middling and in small quantities. This township is watered by three or four small streams from three to five feet in width and four to ten inches in depth, the water being of good quality. No cascades nor rapids are to be found. The summer season has been warm and dry. Frost has been felt in nearly every summer month. I have not met with any stone quarries nor minerals of any kind. Duck and prairie fowl can be seen.—*J. F. Richard, D.L.S., 1904.*

Township 36.—This township can be reached by the route from Kamsack to Fort Pelly, or again by the one from the village of Swan river. Both routes are equally good and permit transportation of a moderate load. The soil generally undulating is a sandy clay, of good quality, and favourable to the cultivation of all kinds of cereals. This township is entirely covered with poplar and spruce, varying from five to twenty-four inches in diameter, amongst which can be found a large quantity of poplar and willow brush. This township has been ravaged by fire, so much so, that the greater half of the wood left standing is dry. Hay is in very small quantity and of medium quality. It can be found here and there around the marshes and along the streams. Three or four small streams, having a width of from four to eight feet and a depth of six to eighteen inches, flow from the northwest towards the southeast or the south. The water is of good quality. The land traversed by these streams suffers little, if at all, from floods. There are no falls nor rapids. The summer has been hot and dry, the autumn splendid. Frost has been felt in nearly every summer month. Winter has set in during the last days of November. I have not met with any stone quarries nor minerals of any kind. The game consists of wild duck, prairie fowl, moose, deer and bear.—*J. F. Richard, D.L.S., 1904.*

TOWNSHIPS WEST OF THE SECOND MERIDIAN.

Range 1.

Township 36.—The route to be followed to reach this township is the one leading from Yorkton, Assa., to Fort Pelly, Assa. It can also be easily reached and in less time by the route coming from the small town of Swan River. Both routes permit

of transporting an average load. The soil consists of a sandy clay, of excellent quality for cultivation of all kinds of cereals. This township is, in general, slightly undulating. It is entirely covered with poplar and spruce from three to ten inches diameter, which is for the greater part mixed with poplar and willow brush. Spruce is in small quantity. Hay is scarce, although it is found along the streams and marshes, which are not very numerous. Many small streams, varying from three to ten feet in width and from three to twelve inches in depth, can be seen everywhere throughout the township. Swan river traverses the western portion of the township from north to south. Its average width is from sixty-six to one hundred feet, depth varying from two to six feet and current about two miles an hour. It flows through a valley about one-half mile wide. The banks of the valley are about three hundred feet high. There is no water power nor falls of any consequence. The summer has been remarkably warm and dry. The autumn was magnificent. Frost has been felt in nearly every month. There are no quarries nor minerals of any kind. The game consists of duck and prairie fowl.—*J. F. Richard, D.L.S., 1904.*

Range 2.

Township 22.—This township is easily reached from Saltcoats by three good graded roads. One at either the northeast or northwest corner of the township and one entering the township along the east boundary of section 33. Saltcoats is a town having a population of about 400, situated in township 24, range 2, and is on the Yorkton branch of the Canadian Pacific Railway. The soil of this township is quite suitable for grain growing, which has been proved by the present settlers. There is generally from four to eight inches of black loam with a clay or sandy subsoil; about eighty per cent of the township has a sandy subsoil. The surface throughout is gently rolling. A few sections are first class for farming purposes. The greater part of the land is second class and only a few quarters are third class. There is considerable poplar bush and scrub in this township, which is found on sections 11 to 29, inclusive. The poplar bush is quite thick and continuous. The trees range in size from six to ten inches in diameter. The most of the bush is found as follows: On sections 14 and 15, the north half and southeast quarter of section 16; the north half of sections 10 and 11; the southeast quarter of section 20; the legal subdivisions 1 to 12 of sections 21, 22 and 23, and the southwest quarter of section 24. Any of these lands that are not patented or entered for, should be reserved as a wood supply for the settlers. The amount of hay found is somewhat limited. On an average there are about two hundred tons of hay harvested during a season from the southwest quarter of the township, to which the hay ground is confined. The township has a limited supply of water. There are but few sloughs. Wells about forty feet deep are the chief supply of water. A reservoir has been constructed by the provincial government on section 33, a portion of which is also on section 28. The reservoir has an area of about ten acres and an average depth of about ten feet. There are no water powers in the township. The township is favourable for grain growing. One settler who has been in the township for fourteen years says he has not yet had his wheat frozen. The only available fuel is poplar wood, of which there is a permanent supply if protected from prairie fires. There are no stone quarries, neither are there minerals of economic value to be found. Game is limited to prairie chicken and rabbits.—*R. H. Knight, D.L.S., 1904.*

Township 36.—This township is very nearly equidistant from Kamsack and the small town of Swan River. From these two places the township can be reached with equal facility. These two roads are about in the same condition. Both routes permit of transportation of a moderate load. The soil, composed of a sandy clay, appears to be of an excellent quality for the cultivation of all kinds of cereals. This township is very slightly undulating. It is entirely covered with willow and spruce from six to

twenty-four inches in diameter, mixed with very thick growth of poplar and willow brush. The southeasterly portion of the township is more thickly wooded. It is this portion which contains nearly all the spruce and the wood of larger diameter. The marshes are relatively numerous in the west and northwest portion of township. The hay is of mediocre quality and scarce, although there is some around nearly all the marshes. Many small streams, from four to ten feet in width, having a depth of six to eighteen inches, and a slow current, water this township, flowing generally towards the east and northeast. The water is of good quality. The lands, traversed by these streams, appear not to suffer by their overflow. There are no water powers, nor falls nor rapids. This summer has been excessively dry and warm; the autumn has been excellent; winter and snow have made their appearance during the last days of November. Frost has been felt in nearly every month. There are no quarries nor minerals of any kind. The game consists of wild duck, prairie fowl, bear, deer and moose.—*J. F. Richard, D.L.S., 1904.*

Range 13.

Township 46.—This township is most easily reached by following my trail (as described in report of township 46, range 14, west of the second meridian) from Tisdale to its intersection with the north boundary of section 22, township 46, range 14, thence following more or less along the north boundaries of sections 22, 23 and 24 to the east boundary of the township (fording Trappers creek at about the middle of section 27). Thence along the north boundaries of sections 19, 20 and 21 and the east boundaries of sections 28 and 33 in township 46, range 13 to the correction line. The soil is mainly sandy loam or black loam on a subsoil of clay or sandy clay, and though slightly light in places is excellent soil and suitable for growing all the ordinary cereals and vegetables that can grow in the district. Except along the banks of Crooked river the surface is covered with a dense growth of large and small poplar, willow and some spruce. A few small areas are covered with spruce and tamarac, but generally the timber is small and suited only to the needs of settlers. A little coarse hay found on the banks of Crooked river is all that is to be had in the township, though sufficient good pasturage can be found in many places. In the vicinity of Crooked river and its tributaries good water can be procured on or near the surface. In other parts of the township it will have to be dug for. The water is slightly alkaline, due doubtless to concentration during the dry summer. No part of the land is liable to be flooded. No falls or rapids occur on the streams and consequently no water power could be made available. Crooked river flows northerly through the western part of the township and averaged at the time of the survey, sixteen links wide, and one foot deep and flows with a current of about one-half mile per hour. The climate is moderate; a few light summer frosts occurred which, however, did not appear to do any harm. Abundance of wood for fuel is readily obtainable in all parts of the township. No coal or lignite veins were encountered. No stone in place was seen. A few limestone boulders were encountered. Traces of bear, moose and small deer were encountered along the banks of Crooked river, and a few ducks were seen.—*H. S. Holcroft, D.L.S., 1904.*

Township 47.—This township may be reached by following my trail through township 46, range 13, to the quarter post of the south boundary of section 3 of township 47; thence along the correction line to the east boundary of section 3; thence northerly and westerly along the east boundary of sections 3 and 10 and north boundary of sections 16, 21, 28 and 33 to the north boundary of the township. The soil is mainly black loam from two to eighteen inches in depth on a subsoil of clay and is suitable for growing all the ordinary cereals and vegetables. The surface is mainly covered with small trees. A few patches of prairie occur in the northern part. The

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township contains a great many small marshes scattered all over the surface, with the exception of sections 1 and 2, which are high ground and sandy. The only timber of economic value is a bluff of spruce and large poplar of about thirty acres in extent situated in the northern parts of sections 34 and 35. The timber averages about sixteen inches in diameter. The dryer marshes produce a large amount of coarse hay. Abundance of water exists in the various marshes throughout the township and water may be obtained in the vicinity of these marshes by digging down a few feet. The water in many places at the time of the survey was slightly alkaline, due doubtless to concentration caused by evaporation during the dry summer. The land is not liable to be flooded. No water power is available. Crooked river at the time of the survey was a stream averaging sixteen links wide and one foot deep, with a current of about one-half a mile per hour. The climate is moderate; a few light summer frosts occurred but did no apparent damage. Abundance of wood for fuel may be obtained in all parts of the township. No coal or lignite veins were seen. No stone in place was encountered, a few limestone boulders were seen in the eastern half of the township. No minerals of economic value were seen. Signs of bear were plentiful and some signs of moose and small deer were seen.—*H. S. Holcroft, D.L.S., 1904.*

Township 48.—This township is reached from township 48, range 14, by my trail, which enters the township at the northwest corner of section 7, whence it proceeds northerly and easterly to the left bank of Carrot river, which it crosses on the east boundary of section 17, over a bridge built by me; thence easterly along the north boundary of section 9; thence southerly along the east boundaries of sections 3 and 4 to the south boundary of the township. The soil is mainly black loam of thickness from two inches to eighteen inches over a subsoil of clay. On the north of Carrot river, in the eastern part of the township, there is an area of sand and sandy loam. The soil of this township would grow all the ordinary cereals and vegetables that grow in the district. About ninety per cent of the surface north of Carrot river is covered with a dense growth of trees, the remainder being marshes mostly covered with hay. A large marsh extends over the northeast quarter of section 35 and northwest quarter of section 36. North of Carrot river the land is very nearly level. South of the river there is a valley extending from within half a mile of Carrot river on the north, to within half a mile of the south boundary, being about two miles in width. The depth of this valley is about thirty feet, thus putting it on a level with the water of Carrot river. This valley is covered with a thick growth of white poplar, willow and black poplar, interspersed with an occasional open space of a few chains diameter. The open spaces are covered with either marsh or upland grasses growing luxuriantly. South of Carrot river the surface is covered approximately in the following proportions: Wood and heavy scrub, ninety per cent; prairie and light scrub, two per cent; marsh, eight per cent; heavy scrub, 90 per cent; prairie and light scrub, 2 per cent; marsh, 8 per cent. The only timber in the township comprises patches of spruce forming a fringe extending along both banks of Carrot river, from within a mile of the west boundary to the east boundary of the township, and parts of a bluff of spruce near the south of sections 2 and 3. These measure up to twenty-eight inches in diameter and will average twelve inches; there are about eighteen acres of spruce in each of sections 2 and 3. Nearly all the marshes are covered with good marsh hay and all the open spaces with a fine grade of upland hay. The only permanent body of water is Carrot river and a small part of Leather river. The water is brownish yellow in colour and holds considerable clay in suspension. Several small streams flow into the Carrot. These contain clear water but they nearly all dry up in dry weather. Good fresh water can be had almost any place by digging a few feet into the ground. Carrot river averages about one chain in width and about eight or ten feet in depth, with current from one and one-half to two and one-half miles per hour. The land is not liable to floods. No water power is

at present available, nor is it probable that the construction of dams for generating water power would be feasible. The climate is moderate. No summer frosts occurred during the time of survey. Fuel in the shape of small dead poplar and the larger dead willow can be readily obtained in all parts of the township. No coal or lignite veins were encountered. No stone in place was encountered. In sections 10, 11, 2 and 3 a few boulders of limestone and the archæan rocks were seen. No minerals of economic value were seen. Traces of bear and moose were quite plentiful, other game is very scarce.—*H. S. Holcroft, D.L.S., 1904.*

Range 14.

Township 46—This township is reached by a trail from Tisdale, following the road allowance between ranges 14 and 15, as far as section 18, township 46, range 14, where it turns east across Presbyterian creek over a bridge built by me. In dry weather the trail is very fair, but becomes very soft and heavy when wet. The soil over the whole township is black loam from 2 to 8 inches in depth on a subsoil of clay, and is suitable for growing any kind of produce which the climate will permit of. The surface is, with the exception of a few small areas, covered with poplar and willow varying from scrub to trees 6 inches in diameter. The banks of Trappers creek, through section 34, are quite open, being covered with light scrub. The balance is up to about 85 per cent of the surface thickly covered with bush and about 15 per cent is marsh and wet; the marshes varying from 1 to 20 acres and in all cases surrounded by dense willow. The only timber is poplar, which is scattered over the township, but none of it large enough for lumber, and it should be reserved for settlers' use. The only hay is found in the marshes which are scattered throughout. The water of the township is all fresh. Presbyterian creek runs across the southwest corner and the northwest corner, and Trappers creek, which takes its rise in township 45, range 14, runs from the southeast through the east part of the township. Both these creeks are very high in spring, but do not overflow their banks to any extent; both are permanent and evidently do not dry up in a dry season. Presbyterian creek averages 18 links wide and 3 feet deep at the time of survey (May, 1904), and is running with a current of about 2 miles per hour. Trappers creek is much smaller, being at the time of the survey about 8 links wide and 2 feet deep and running at about 1 mile per hour. No falls or rapids occur on these creeks and consequently there are no water powers. The climate is moderate with cool nights. A light frost occurred on the night of June 13, which, however, did not do any harm. The days are generally warm, but not extremely so. The only fuel is the poplar and larger willows, which may be found everywhere in the township. Only a few stones were encountered, and these were mostly boulders of the older rocks, granite, &c., and an occasional fragment of limestone; no stone in place was discovered. No minerals were encountered at all. The game seen was ducks, geese, chickens and ruffed grouse, but not in large numbers. Traces of moose, antelope and bears are quite plentiful.—*H. S. Holcroft, D.L.S., 1904.*

Township 47.—This township may be reached from Tisdale on the Canadian Northern railway by following the road up the range line between ranges 14 and 15 to Presbyterian creek, thence by trail through township 46, range 14, thence northerly it follows the bank of Trappers creek until near its junction with Leather river, where the trail turns west and north and crosses Leather river by a bridge made by me in the northeast corner of section 10, thence it follows closely the line between sections 14 and 15 and sections 22 and 23, thence along the high ground west of Leather river to the north boundary. The soil all over this township is black loam to a depth of from three inches to fifteen inches overlying a subsoil of clay, and should prove suitable for growing the ordinary cereals and vegetables. Away from the narrow valley of Leather river, the land to the north and west would have to be drained

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before it could be cultivated to any considerable extent, but this should prove to be a task comparatively easy of accomplishment since the level of Leather river is twenty or twenty-five feet below the level of most of the land. Small willow and poplar cover about fifty per cent of the surface of the township, while about thirty per cent is marsh made up of small low-lying patches surrounded by dense willow; about five per cent is covered with scrub, poplar and willow and the remainder about fifteen per cent is timbered with poplar and spruce. In sections 7, 8, 9 and 10, are some bluffs of spruce from six inches to eighteen inches in diameter and averaging in sections 9 and 10 twelve inches in diameter, while in sections 7 and 8 it averages about nine inches. These bluffs, being practically all the spruce in the township, occupy about sixty acres of land. There not being much timber suitable for building purposes in the locality, I would advise that this spruce be reserved for the general use of the settlers in the township. Scattered along the banks of Leather river and in the central northern portion of the township is some poplar up to twelve and fifteen inches in diameter. A few marshes containing marsh hay were encountered in the portion of the township lying north of Leather river; this is the ordinary course marsh hay. The only running water in the township are portions of Presbyterian creek, Miners creek, Trappers creek and Leather river. The supply is sufficient and permanent for all ordinary requirements and is all fresh water. The creeks are small and may become almost dry in a dry season. Leather river averaged from thirty to forty feet in width at the time of the survey, with a depth averaging eight feet and a current of from one to two miles per hour. In dry seasons the volume of water is very considerably diminished. It is very crooked and winds its way through steep banks of solid clay, averaging fifteen feet in height above water level at the time of survey. Except around the banks of the streams and during the spring freshets the land is in no danger of being flooded. No falls or rapids occur where water power may be utilized. No power could be developed by the use of dams as the river would too easily cut out new channels for itself through the clay. The climate is moderate, the nights being cool and the days moderately warm, with usually a wind blowing; the season of 1904 was moderately dry, with the prevailing wind from the northwest or west. A few light summer frosts occurred, which apparently did no harm. There is fuel in abundance, consisting of poplar, spruce and the larger willows. An immense amount of dead windfall was encountered which makes excellent fuel. No coal or lignite veins were encountered. No minerals of economic value were seen. The clay may, however, be suitable for brickmaking. A few prairie chicken and ruffed grouse (commonly called partridge) were seen. Bear and moose are quite plentiful, there are a few jumping deer, also a few geese and a considerable number of duck.—*H. S. Holcroft, D.L.S., 1904.*

Township 48.—This township may be reached by following my trail through townships 46 and 47, range 14. It enters this township in section 2. Through the centre of this section it runs due north to Carrot river, which is crossed by a bridge built by me, thence northerly and westerly to the northeast corner of section 16, where it ends. A branch of the trail goes eastward to range 13, leaving the above mentioned trail near the quarter post on the north boundary of section 11 and section 12 as far as the east boundary of the township. This trail should be dry at all times of the year having been cut through dense small poplar, willow and windfall. The eastern part crosses a stream and some adjoining low ground, which may be wet in the spring of the year. Carrot river may be forded with difficulty in a few places in extremely dry seasons, but one wishing to cross it with wagons in an ordinary season will have to build a bridge. The soil throughout is first class, a black loam with occasional patches of sandy loam upon a subsoil of clay. The soil should grow all the agricultural and garden products of the Canadian Northwest. Except in the immediate vicinity of Carrot river, which is somewhat broken, the country is level, the northern part being especially very level. In sections 2, 3 and 12 a few acres are covered with

light scrub, the rest of the township being covered with a dense growth of small poplar and willow and in the northern part poplar bush. The country having been largely burnt over some years ago, the second growth has come up very densely and is interlaced with dead trees and a great deal of deadfall is lying. The northern part of the township has some large marshes, one in the northwest corner being nearly two and a half miles in length and varying from, a few chains to a half a mile in width, and covered with a luxuriant growth of excellent hay. The surface is covered approximately as follows: Woods and heavy scrub, eighty per cent. marsh, twenty per cent; prairie and light scrub, a very small part. Along the banks of Carrot and Leather rivers an occasional spruce was seen, but nowhere else in the township were any noted. Along the banks of the Carrot groves of poplar up to ten inches in diameter were encountered and a considerable bluff of poplar up to twelve inches occurs in sections 21, 22, 27 and 28. The northern half of the township contains some large marshes, covered with hay—both marsh hay and red top—the latter growing to a height of six feet. All water encountered was fresh and the supply is sufficient and permanent. Leather river passes through a mile or two of the southeast corner. Carrot river averaging at the time of the survey a little over a chain in width and ten feet deep, winds through the township from west to east. The current averages from one and one-half to two and one-half miles per hour, with a considerable volume of water. The river has cut its way through the solid clay and has banks from twenty to thirty feet in height. The banks show evidence that the water has risen to the top in high water, but there is little or no danger of the country being flooded to any serious extent by the spring freshets. Carrot river through the township is about eleven miles in length. The rivers contain no falls or rapids, suitable for the generation of water power, nor is it likely that the construction of dams for the purpose of supplying power would be feasible. The climate is moderate, cool nights with occasional light summer frosts. Plenty of poplar of sufficient size to make good firewood can be procured nearly all over the township. No coal or lignite was discovered. No stone was seen in place. No economic minerals were seen. Traces of moose and bear were plentiful; an occasional partridge was seen, but no prairie chicken. The wet portions of the township can doubtless be drained through some small creeks which flow into Carrot river.—*H. S. Holcroft, D.L.S., 1904.*

Range 15.

Township 27A.—This township lies on the eastern slope of the Little Touchwood hills, and is about sixty miles north of Qu'Appelle, on the main line of the Canadian Pacific Railway. The Qu'Appelle and Prince Albert trail passes through this township. Lipton, the nearest station on the Kirkella or Pheasant hills branch of the Canadian Pacific Railway, is expected to be open for business some time this fall, and is about thirty miles southward and a little west of the trail above-mentioned. The soil generally is a sandy or clay loam with clay subsoil, and is suitable for raising grain and vegetables, also grasses for pasturage purposes. The surface is rolling and about one-quarter covered with scrub and timber, most of which has been scorched by fire. Sections 6 and 7 might be reserved for fuel and fencing timber, there being a considerable supply in those sections, and if protected from fires they will soon be again covered with green timber, as at the present time there is a large quantity of young poplar growing up. The timber in these sections is from three to ten inches in diameter. Much of it has been scorched by fire and a considerable amount of it has fallen but is in good condition for fuel. Along the west side of section 5 and at the northeast corner of section 8 and northwest corner of section 9 there is a quantity of green poplar four to eight inches in diameter suitable for building purposes, about ten acres of good timber on each of these sections. Three-fourths of the remainder of the surface

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is open, the balance is covered with scrub and small timber. There are some large hay meadows in northeast quarter section 5 and northwest quarter section 4, also in southwest quarter section 10 and south half of section 2, also in northeast quarter section 11 and northwest quarter section 12, besides many small hay meadows scattered over the township; in ordinary seasons a large quantity of hay can be cut in the township. The water is generally of good quality in the ponds and sloughs, but in Lac Michel in section 6, it is not very good, and in Pelletier lake in sections 5 and 8 it is rather alkaline. Two creeks flow into this lake, one from the west reported to come from Bittern lake, in township 27A, range 16, and one from the north from Reserve lake, in northwest quarter section 8, the former being about four feet wide and one foot deep, and the latter fifty feet wide and of the same depth in the beginning of June last. The water in both creeks is of good quality. From Pelletier lake a creek flows southward and must cross the south boundary of section 6, but I did not follow its course. There are no water powers. The climate is similar to other parts of Assiniboia, with liability to summer frosts. Fuel can be obtained in abundance in sections 6 and 7, also further west in township 27A, range 16, consisting of scorched poplar, three to ten inches in diameter. There is also in most of the sections a small quantity of timber which could be cut and used for the purpose. No stone quarries and no minerals were observed. Game consists of jumping deer, prairie chicken, partridge and rabbits. All of which are plentiful. Four settlers were found and others were about to locate in the township as soon as survey was completed. I consider this township well suited for stock raising and farming on a small scale.—*Wm. T. Thompson, D.T.S., 1904.*

Township 27.—This lies north of Muskowekwun's reserve, and is fractional, comprising only 18 sections, the remainder being in the reserve above-mentioned. The Hudson's Bay Company's trading post, 'Touchwood Hills,' is situated on the west side of a lake in section 29, and has been in operation for many years. There is a post office here and weekly mail to and from Qu'Appelle, on the Canadian Pacific Railway, which is about 65 miles distant via the Qu'Appelle and Prince Albert trail, and this is at present the best route to follow to reach this township, but later in the season when the Kirkella branch of the Canadian Pacific Railway is in operation to Lipton station on the north side of the Qu'Appelle valley, that will be the nearest railway point being about 35 miles distant to the south. The soil generally is a clay loam or sandy loam and subsoil clay, and is suitable for growing grain and vegetables. Surface is generally rolling and about one-third covered with scrub and timber, most of which has been scorched by fire, but there is some green poplar 2 to 10 inches in diameter in north halves of sections 32, 33 and 34, and along the west boundary of section 19. Some very fine green timber for building purposes 3 to 12 inches diameter and scattered bluffs of second growth poplar in most of the sections. Sections 28, 29, 30, 31, and 32, and 36, east halves of sections 22, 23, and 26 are about three-fourths open, and remainder of township about half open and half covered with scrub and timber. There are a few settlers in the township. In ordinary seasons a large quantity of hay can be cut in the township, there being numerous hay meadows, but this spring, owing to the unusual snow fall last winter, these are mostly covered with water and have the appearance of ponds and lakelets, and it will only be possible to cut hay around the margins. The largest of these meadows extends across section 28 and parts of sections 21 and 22 and in former years a large quantity of hay has been cut in it. There is also a large meadow in the north half of section 23 and south half section 26, while in nearly every section there are small sloughs around the margins of which hay could be cut in ordinary seasons. The water is generally of good quality in lakes, ponds and sloughs. There is a lake covering about 180 acres in sections 29 and 32, part of another in south half section 19, covering about 60 acres, and small portions of another extend into northwest quarter 19 and southwest quarter 30. These were the only lakes of sufficient size to traverse—and the water supply in them is, I believe, permanent. No creeks were no-

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ticed, but I am informed that in high water the lake first mentioned has an outlet to the southwest. The flat lands and hay meadows only are liable to be flooded, the remainder of township being high and rolling. There is no water power. The climate is similar to the southern part of Assiniboia generally, but with a probability of summer frosts, and for that reason oats would be a safer crop than wheat. A small quantity of poplar and willow can be obtained on most of the sections, and a considerable amount of timber for fuel can be had in northeast quarter 32 and north halves of 33 and 34, as well as a small quantity of green poplar suitable for building purposes and along west side of section 19 there is some very fine green poplar timber 3 to 12 inches in diameter, excellent for the latter purpose. No stone quarries nor minerals were noticed. Game consists chiefly of a few jumping deer, rabbits, geese, ducks, prairie chickens and partridge, all the last mentioned being plentiful. Fur bearing animals, muskrats, badgers and foxes, also some coyotes or prairie wolves. In conclusion, I may state that the projected line of the Grand Trunk Pacific Railway passes through this township, and that I consider the land well suited for stock raising and mixed farming on a small scale.—*Wm. T. Thompson, D.T.S., 1904.*

Township 37.—This township is situated about six miles from the Canadian Northern Railway. A good wagon road has been opened out lately; it strikes about the middle of section 6. The soil is composed of black loam from five to eighteen inches in depth; the subsoil is of yellow, white and gray clay; it is suitable for general farming and stock raising. The surface is covered with small poplars and high willows, and just a few patches of prairie of very little importance. Timber is poplar, from two to four inches in diameter. Hay is plentiful especially on the following sections: 5, 6, 7, 8, 18, 17, 19, 20, 4, 3, 9 and 10. Hundreds of tons of good hay can be cut on every one of these sections. Water is plentiful and fresh, and is found on every quarter section; there are two large coulees running through the township, one through the centre, the other through the two western tiers of sections. Water is permanent. There is no water power. The climate is good; there are no summer frosts. Fuel is plentiful. There is no coal or lignite. There is no stone quarry. There is no mineral of any kind. Game is plentiful. Bear, antelope, deer, moose, muskrat, cranes, duck, pelican, swan, geese, pheasant, snipe, of all kind. There are also two large lakes with fish.—*C. E. Lemoine, D.L.S., 1904.*

Township 38.—This township is situated about fifteen miles north of the Canadian Northern Railway, Quill Lake station. There is a good road to reach it. The soil is composed of black loam from five to eighteen inches, with clay for subsoil; sand and gravel is also found in a few places. The surface is covered with poplar from two to eight inches diameter, and is level. The lakes in this township are large, and contain many fish. There are no hay meadows. The water is plentiful, fresh and permanent. The timber is poplar from one to six inches diameter, and is no good for timber purposes. In my opinion it ought to be reserved for settlers. The climate is good, and there are no summer frosts. There is no water power. Fuel is plentiful over all the township. There are no signs of coal or lignite or mineral of any kind. There are no stone quarries. Game is plentiful, consisting of deer, antelope, fox, badger, lynx, bear, mink, muskrat and all kinds of flying game. This is not a good farmnig land. It is situated on the height of land. There is a good road leading north to Melfort, and south to Quill lake.—*C. E. Lemoine, D.L.S., 1904.*

Township 39.—This township is situated about twenty miles north of the Canadian Northern Railway, Quill Lake station. There is a good road to reach it. The soil is composed of black loam from five inches to eighteen inches deep with clay for subsoil; sand and gravel is also found in a few places. The surface is covered with poplar from two to eight inches in diameter, and is generally level. There are no hay marshes. One-third of the surface is covered by large lakes, two of which were found to be eight to twelve feet deep, and contain fish. They are situated, one of them on

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the following sections: 32, 33, 28, 29, 20, 21 and 16, the other on sections 15, 22 and 27; the others, of less importance, are from four to six feet deep. The water is plentiful, fresh and permanent. The timber is poplar, from one to six inches in diameter, and is no good for lumber purposes. In my opinion, it ought to be reserved for settlers. The climate is good, no summer frosts. There is no water power. Fuel is plentiful. There are no signs of coal or lignite. There are no stone quarries. There are no signs of minerals of any kind. Game is plentiful—deer, antelope, fox, badger, lynx, bear, mink, muskrat and all kinds of birds. This township is situated on the height of land. There is a good road leading north to Melfort and south to Quill lake.—*C. E. Lemoine, D.L.S., 1904.*

Township 40.—This township is situated about half way between the two branches of the Canadian Northern Railway. There is no road to reach it from the south, except in winter time, on account of a long chain of deep lakes and a large muskeg, impossible even for men to get through. The soil is not suitable for farming. It is entirely covered by small poplar and high willows. About one-fourth of its surface is occupied by large marshes. There is also one large lake and five smaller ones. The soil on the east half is very rocky with a few inches of black loam, gravel, stones, with sand as subsoil. Clay is found in a few places. The township is entirely unsuitable for farming. There is no timber worth mentioning. There are no hay marshes. The water is fresh and permanent. There is a deep coulée running through the township, from seventy-five to one hundred feet wide, containing a stream three feet deep, with a current of four miles an hour. There is no water power. The climate is good with no summer frosts. There is no sign of coal or lignite. There are no stone quarries. There is no sign of mineral of any kind. Game is plentiful and consists of deer, antelope, bear, fox, badger, lynx, mink, muskrat, and all kinds of birds. I believe that the only way possible to reach this township in summer time would be by coming from the north.—*C. E. Lemoine, D.L.S., 1904.*

Township 42.—I proceeded to the survey of this township by the Canadian Northern Railway to the village of Melfort, and from Melfort by wagon, southerly over a road towards Nut lake, to township 43, range 17. I made surveys of the latter township and others south of it, going in over roads made by myself, I then returned to Nut lake road and continued along it to the southern side of this township. The township is accessible from either of the villages of Melfort or 'Star City' by roads to Nut lake directly, passing on the way a sawmill near the township. The surface soil is black loam of good depth, with a subsoil of clay. The uplands are suitable for grain or general farming and the lower parts would be good for grasses and ranching. The township is covered with scrub and a small growth of timber, some good sized trees of poplar and balm of Gilead occur mixed with the others in many places. Some patches of prairie break into the scrub from the south, considerable areas of prairie are found in the township to the west, but these do not reach to this one. Some spruce was met with as well as tamarac swamp, much more of the surface is covered with scrub than with large timber. But little hay lands exists. In dry seasons some hay might be gathered around the lakes. Water would usually be found everywhere at all times, but no streams worth noting were seen. The water is all fresh. No streams exist to flood the land. Frosts in the neighbourhood injured the grain crops in the early fall before harvesting, during the summer of 1904; these summer frosts occur only some years. Poplar wood for fuel is plentiful everywhere, but no coal or lignite was seen and no stone suitable for quarrying was found. No economic minerals were discovered. Bears are numerous, deer of various species would appear to be not uncommon; ducks frequent the ponds and marshes; but few part-ridges or prairie chickens were seen during the season.—*G. B. Abrey, D.L.S., 1904.*

Township 46.—This township lies six miles north of the village of Tisdale, a station on the Prince Albert branch of the Canadian Northern Railway. The soil

is a heavy black loam with clay subsoil; the surface of the township is undulating and covered with a thick growth of willows and small poplar. There is no timber in this township but there is considerable fallen willows and poplar, which makes good fuel. The township is well watered by Leather river, Doghide river and a number of smaller streams. The water in all of these streams is fresh. There is plenty of hay in the sloughs, of which there are quite a number in the easterly and northerly part of the township. There are no minerals or stone quarries in this township. The streams become very small in dry seasons, so that they are not available for water power. I think though in the driest season there would always be plenty of water for cattle in the pools. The climate is about the same as Manitoba. I think though that the rain and snow fall is greater. There is any amount of poplar timber east of this township, so that a settler can get logs for buildings within a few miles. Small game such as wild ducks and prairie chickens are numerous, and small wild fruit is plentiful.—*W. J. Deans, D.L.S., 1904.*

Township 47.—I went out by the village of 'Star City' on the Canadian Northern Railway northwesterly to township 47, in range 16, going over settlers roads to near the southern boundary of that township. I then cut and made roads through that range and into the township now being described, fording Carrot river with my outfit near the centre of the township in section 28. The soil is a deep rich black loam underlaid with clay. Some portions would be suitable for grain farming and probably a considerable portion of it, if drained. Carrot river runs in a deep valley and would afford drainage to land not too far away. As it now stands the country is too wet for general farming, but might be utilized for ranching. No prairie lands appear; the whole is covered with scrub timber with, in many places, a thrifty growth of timber too large to be called scrub. In some places large timber is found; the patches of large timber are found at intervals over the whole township. The timber is usually composed of poplar, but patches of spruce occur in the valleys of the rivers, and though large timber is not in sufficient quantity for lumbering purposes, enough is available for settlers uses in building. Much of the township is flat and wet, and marshy; this, with some clearing and preparation, would make good pasturage and hay land. The water is all fresh. The marshes and sloughs are not deep and would occasionally dry up, but generally, water is in sufficient quantity for all purposes required. No lakes were met with requiring to be surveyed. Carrot river crosses the northwesterly portion of the township within a deep ravine. Leather river runs along the eastern part of the southern boundary. These streams might be made available for water power. There are no water powers, but both rivers run with strong current. The ravines are too deep for these streams to flood large areas of land. No parts would be subject to the flooding except locally from excessive precipitation outside of the comparatively narrow valleys of the streams. Frosts are liable to occur in early fall to injure grain crops. Poplar wood for fuel purposes may be obtained in all parts of the township. No coal or lignite was seen. No stone quarries exist. No economic minerals were discovered. Very little game was obtained; bears are common, duck frequent the waters. A few Indians were met with hunting for deer.—*G. B. Abrey, D.L.S., 1904.*

Township 48.—This township was reached from Toronto by way of the Canadian Pacific Railway to Winnipeg, thence by the Canadian Northern to the village of Melfort. I outfitted at Melfort and after subdividing some townships south of that village, I went northerly, crossed the Canadian Northern Railway at the village of 'Star City,' and continued northerly through the settlements as far as trails were made, then made our own roads, and forded Carrot river and camped in the townships being described. The upper soil is black loam of good depth, underlaid, generally, with clay. When drained the township would be suitable for mixed farming. In the meantime, after clearing of timber and scrub, it would be adapted to ranching.

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There is no prairie. The whole township is covered with a thick growth of scrubby timber, there is but little large timber. Some spruce and tamarac is found in the valley of Carrot river and jackpine occurs on the sandy ridges in the northerly part of the township. Some of the marshes grow grasses which would furnish hay. At present good pasturage is quite limited. The water is all fresh. The ponds and marshes are quite shallow, and their areas would fluctuate much upon changes of the precipitation. The water would be permanent for all practical purposes. Carrot river crosses the township in a deep valley of no great breadth, this river flows with a strong current and might be dammed and developed for water power. This stream is subject to considerable fluctuation in volume during the season. All streams found run in ravines, having cut their way towards Carrot river. This river was traversed across the township. No other waters were surveyed. No large areas would be subject to flooding. The climate is subject to early autumn frosts. Poplar wood for fuel can be obtained everywhere. No coal or lignite was seen. No stone or stone quarries were found. No economic minerals were discovered. Game was not found to be plentiful. Bears are common. Indians were met with hunting deer. A few ducks and partridge were seen.—*G. B. Abrey, D.L.S., 1904.*

Range 16.

(Part) Township 26.—This township lies in the Little Touchwood hills and has been heavily timbered with poplar and balm of Gilead trees from four to twelve inches in diameter, but a few years ago a very destructive fire swept over this tract of country and left it covered with brulé and windfall, with some patches of green standing timber. Among all this, young trees are now growing up and in the course of a few years, if protected from fires, the whole will again be well timbered. There is a large quantity of scorched timber from two to twelve inches in diameter suitable for fuel and building purposes on every section, and a considerable amount of green timber of the same dimensions on sections 25 and 36 adjoining Wolf lake and Lac Michel. The route for reaching this township is at present via the Qu'Appelle and Prince Albert trail, which passes about three miles east of it and the distance is about sixty miles from Qu'Appelle, but when the new Canadian Pacific Railway branch line is open for traffic, which will probably be this fall, the new station called Lipton will only be about thirty miles distant to the south. The soil is generally of very good quality, but the surface is so hilly and broken by small ponds and marshes that I consider it better adapted for the growth of timber than for agricultural purposes, especially as there are no prairie openings and the land would require to be cleared of windfalls and underbrush before it could be made available for cultivation. There will be in seasons of low water a considerable amount of hay in marshes or meadows adjoining Wolf lake in section 23, 24, 25, 26, 35 and 36, but in times of high water as at present, little or no hay can be cut in the portion of this township surveyed by me. The water is not very good, a good deal of decaying vegetable matter around the margins of ponds and lakes gives it a strong unpleasant odor, but it is quite likely that there may be springs of good water, which were not observed by us, as in winter these would not be so readily noticed. There are only a few small creeks, one of these crosses the west boundary of section 27, and is three feet wide and one foot deep and flows eastward. Another of same size and flowing in same direction crosses the west boundary of section 34. Another creek ten links wide and about one foot deep crosses the north boundary of section 35, flowing north and there are creeks of about the same size and flowing in the same direction in section 36, connecting Wolf lake with lake No. 5 and the latter with Lac Michel. The land is not liable to be flooded, except around the margins of ponds and lakes and connecting marshes. The water supply is permanent. There are no water powers, but it may be mentioned that

lake No. 2 in section 34 is about fifteen feet above lake No. 3, and that there is a connecting high water channel by deepning which the former could be drained into the latter and water power on a small scale be developed. Also from lake No. 4 in same way by deepening high water channel this lake could at small expense be drained eastward, there being a rapid fall in that direction; of course these lakes being very small would not produce power of much value, but by regulating the height of water in them it may be noted that hay can be grown to advantage around their margins. The climate is similar to other parts of Assiniboia with a probability of summer frosts. There is an abundant supply of scorched poplar and balm of Gilead on every section. There is no coal or lignite. There are no stone quarries. There are no minerals. Jumping deer are numerous, also prairie chicken, partridge and rabbits. Muskrats are plentiful, also badgers, wolves (coyotes) and foxes.—*Wm. T. Thompson, D.T.S., 1904.*

Township 27A.—This township lies in the Little Touchwood hills to the east of Gordon's Indian reserve and south of Muskowekwun's reserve. Its surface is rolling and hilly with numerous small ponds and marshes, most of which are connected in high water. A portion of Bittern lake lies in sections 10 and 11; this lake, by soundings taken at northeast angle of section 10, was found to be thirty feet deep and the water of good quality. The entire land surface has, until recently, been covered with a thick growth of large poplar and balm of Gilead trees, but a few years ago a very destructive fire swept over this section of country and damaged the greater part of the timber, leaving it covered with *brulé* and windfall and a few bluffs of green trees, and among this there is now growing up a large quantity of young timber, so that in a few years, if fires are kept out, the whole will again be well timbered. The route for reaching this township is at present via the Qu'Appelle and Prince Albert trail, which passes about three miles east of it and the distance from Qu'Appelle on the Canadian Pacific Railway is about sixty miles, but when the Canadian Pacific branch line is opened for traffic on the north side of the Qu'Appelle valley, the new station named Lipton will only be about thirty miles distant to the south. The soil is of very good quality, well adapted for the growing of timber and for agricultural purposes. The surface is rolling and hilly and covered with *brulé*, windfall and second growth and a few bluffs of green standing timber six to twelve inches in diameter. The green large timber is chiefly in the north half of section 11, where there are about thirty acres of it. Hay is to be had in small quantity only in some small hay meadows scattered over the township and around the margins of ponds; in time of high water, as at present, there would be no hay available. The water is generally alkaline and in most of the ponds has a strong odor of sulphureted hydrogen. The water of Bittern lake was found of very fair quality, but is slightly alkaline. There are no streams of any consequence. Two small creeks cross the south boundary of section 1. They were each about three feet wide and 1 foot deep at the time of survey (Dec., 1903). There are no water powers. The climate is similar to other parts of Assiniboia, with a probability of summer frosts. There is an abundant supply of fuel on every section, of scorched poplar, balm of Gilead and large willow. No coal or lignite was observed. There are no stone quarries or minerals. Jumping deer, both white and black tailed, are numerous. Prairie chicken and partridge are also plentiful and quite a number of rabbits were seen. Muskrats are plentiful and quite a number of signs of coyotes, foxes and badgers were noticed. In conclusion I may say that as timber is not plentiful to the eastward, it might be advisable to make this township a timber reserve, for which it is well adapted.—*Wm. T. Thompson, D.T.S., 1904.*

Township 27.—This is a fractional township situated in the Little Touchwood hills and adjoining Gordon's and Muskowekwun's Indian reserves. The route for reaching it is via the Qu'Appelle and Prince Albert trail leading north from Qu'Appelle on the main line of the Canadian Pacific Railway and passes through section

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36. This trail is well travelled and generally in fair condition. Another route is via the Pheasant hills branch of the Canadian Pacific railway to Lipton and thence north by the trail above mentioned, a distance of about forty miles by wagon. The soil generally is of good quality but the surface is so much broken by hills, ponds and lakelets that it is best suited for stock raising and mixed farming on a small scale. Fractional sections 1 and 2 are partly covered by Bittern lake and other water, the remainder of the surface being thickly wooded in these sections; but most of the timber, which is from three to eight inches in diameter, has been scorched by fire, and a thick second growth is springing up. The following sections on the north side of the Indian reserves are mostly covered with green and scorched poplar, three to eight inches in diameter and second growth, viz., sections 7, 18, S. $\frac{1}{2}$ 19, 8, 9, 16 S. $\frac{1}{2}$ 17, S. $\frac{1}{2}$ 22, 23, 24, S. $\frac{1}{2}$ 25. While in N. $\frac{1}{2}$ 25, also sections 26, 27, E. $\frac{1}{2}$ 34, 35 and 36 there are some good bluffs of poplar with scattered scrub covering about one-quarter of their surface. Sections 31, 32, 33, W. $\frac{1}{2}$ 34, also 28, 29, 30, N. $\frac{1}{2}$ 19, and N. $\frac{1}{2}$ 17, are mostly open and being very hilly it was noticed that during the winter there was but little snow on the southern exposure of these hills, so that stock could pasture on them much earlier than upon the more level land. Mr. Charles McNab, the only settler in this township, informed me that his stock were out feeding on these hills about two weeks earlier than elsewhere in the district, and I consider this renders the locality desirable for stock raising. There are small hay meadows of good quality in nearly every section. There is an abundant supply of water in ponds, lakes and sloughs; in some of these the water is alkaline. Bittern lake covers part of sections 1 and 2 and extends south into township 27A, range 16. This lake was found by sounding at the southeast angle of section 2, to be thirty feet deep and the water to be of good quality. No streams were noted; the land being high and hilly is not liable to be flooded. There are no water powers. The climate is similar to other parts of Assiniboia, with a liability to summer frosts. There is an abundant supply of fuel on the timbered sections already mentioned. No coal or lignite was seen. There are no stone quarries. There are no minerals. Jumping deer, rabbits, prairie chicken and partridge are abundant. I consider this township well adapted for stock raising and mixed farming on a small scale. It might be advisable to reserve the land adjoining the Indian reserve for fuel supply for there is but little to the north and fractional sections 1 and 2 together with the following lands might be reserved for the purposes, viz., south halves of sections 7, 8, 9, 23 and 24, also northwest quarter section 18 and southwest quarter section 19. In the latter quarter sections there is some very fair green poplar suitable for building purposes, also very good building timber is to be found along the east boundary of the southeast quarter of section 24. As the proposed line of the Grand Trunk Pacific Railway will pass either through this township or a few miles north of it, no doubt most of the land will be very soon settled upon.—*Wm. T. Thompson, D.T.S., 1904.*

Township 28.—The Qu'Appelle and Prince Albert trail passes through this township and affords the best route for reaching it, either from Qu'Appelle on the main line of the Canadian Pacific Railway, sixty-five miles south, or from Lipton on the Pheasant Hills branch line, which is a few miles west of this trail in township 22, range 14. The government telegraph line leading from Qu'Appelle to Prince Albert, Battleford and Edmonton, follows the trail mentioned, and a telegraph office and post office named Kutawa, is situated in the northwest quarter of section 10 in this township, and Indian agency buildings in southeast quarter section 16. The soil generally is a sandy or clay loam with clay subsoil and is of good quality, but the surface being generally rolling and with numerous ponds and hay meadows, it is best suited for pasturage and for grain growing to a limited extent, also to the raising of roots and vegetables. About one-quarter of the surface is covered with scrub and timber, the remainder is open. The west boundaries of sections 6, 7, 18, 19 and 30 pass

through a considerable amount of poplar three to eight inches in diameter. There is also a quantity of poplar of same diameter adjoining Heubach lake in sections 17, 18, 19 and 20, also adjoining Bears lake in section 2, and Kutawa lake in sections 14, 15, 22 and 23. There are numerous fine hay meadows, viz.: in sections 23, 24, 25, 26 and 27, also in sections 14 and 15, all of these in high water are connected with Kutawa lake and cover a large area. In addition to these there are a large number of small hay sloughs scattered over the township, a few in nearly every section. The water generally is believed to be alkaline but the ice being thick, only a few lakes were examined; the smaller ponds and sloughs often contain good water. No streams were noted. Land surrounding Kutawa lake comprising the meadow lands already mentioned are liable to be flooded in times of high water, but this is beneficial to meadow lands, provided the high level is not maintained throughout the season. As to the probable depth it is difficult to say, perhaps three feet in wet seasons. There are no water powers. The climate is similar to other parts of Assiniboia, with a liability to summer frosts. Poplar and willow is available for fuel and a considerable quantity may be found around Bears lake, also around Kutawa and Heubach lakes and along the west boundary of the township in sections 6, 7, 18, 19 and 30. No stone quarries were observed nor were any minerals found. Prairie chicken and partridge or ruffed grouse are abundant, also rabbits and a few jumping deer. A preliminary line of the proposed Grand Trunk Pacific railway passes near Kutawa in this township. Some seven or eight settlers are located on homesteads, the original survey having been made in 1880. In conclusion, it may be stated that this township is very well adapted for stock raising and mixed farming on a small scale.—*Wm. T. Thompson, D.T.S., 1904.*

Township 38.—This township is situated about twenty-five miles north of the Canadian Northern Railway, Quill Lake station. There is a good road to reach it. The soil is composed of black loam from six to eighteen inches, with clay for subsoil and silts in a few places. The surface is level and covered with small poplar and willows, the largest six inches in diameter. There are no hay marshes. There are two large lakes and eight smaller ones, but all deep and containing plenty of fish. One of the large lakes is situated on the eastern row of sections and the other is on the northern portion of the township. The water is plentiful, fresh and permanent. The timber is poplar and ought to be reserved for settlers. The climate is good, with no summer frosts. There is no water power. Fuel is plentiful. There is no sign of coal or lignite. There are no stone quarries. There are no signs of minerals of any kind. The township is completely unsuitable for farming. Game is plentiful and consists of deer, antelope, fox, badger, lynx, bear, mink, muskrat, and all kinds of birds.—*C. E. Lemoine, D.L.S., 1904.*

Township 39.—This township is situated about twenty-five miles north of the Canadian Northern Railway, Quill Lake station. There is a good road to reach it. The soil is composed of black loam five to eighteen inches, with clay for subsoil and silts in a few places. The surface is level and covered with small poplar and willows, the largest eight inches in diameter. There are a few hay marshes. There are nine lakes scattered over the township, some large, some small, but all deep and with plenty of fish. The water is plentiful, fresh and permanent. The timber is poplar and ought to be reserved for settlers. The climate is good, with no summer frosts. There is no water power. Fuel is plentiful. There are no signs of coal or lignite. There are no stone quarries. There are no signs of mineral. The township is completely unsuitable for farming. Game is plentiful and consists of deer, antelope, fox, badger, lynx, bear, mink, muskrat, and all kinds of birds.—*C. E. Lemoine, D.L.S., 1904.*

Township 40.—This township is situated about eighteen miles from the Canadian Northern railway branch now under construction and there is a good trail through townships 39, range 17, and 38 and 37, range 16. The soil is composed of a light bed

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of black loam from five to eight inches deep, with a subsoil of good yellow clay. The township is suitable as a timber reserve, as it is entirely covered with large timber from eight to twenty inches in diameter, consisting of poplar and cottonwood, with a few birch and spruce, except on the eastern row of sections where the timber is small, fire having been through that portion about twelve years ago. There are no hay marshes, properly speaking, but on the shore of the lakes there is some good hay, more particularly in the following sections: 14, 23, 26, 27, 34 and 35. The water is fresh and abundant on every section. There are nine large lakes all full of fish. There are no water powers. The climate is rather cold, but no summer frosts occurred. There is no coal or lignite. There are no stones nor minerals. Game is plentiful—bear, deer, antelope, fox, duck, cranes, wild geese, partridge, &c. I believe that the largest part of this township could be reserved as a timber berth, more particularly the part which is situated west of Kitako lake.—*C. E. Lemoine, D.L.S., 1904.*

Township 47.—I proceeded to the survey of this township by way of the Canadian Pacific Railway to Winnipeg, thence by the Canadian Northern Railway to the village of Melfort. I outfitted at Melfort and surveyed several townships southeasterly from that village, then returned to the village of 'Star City' on the Canadian Northern Railway, and passed northeasterly over the settlers' trails to near the centre of the township south of, and adjoining, this one. The soil is a deep rich black loam underlaid with clay. In dry seasons, after clearing, much of it would grow oats and perhaps other grains, but until drained of water the land is much better adapted to cattle farming or ranching. There is no prairie, the whole being covered with scrub, or small trees. In many places this scrub is old enough and large enough to be called timber. These patches of larger scrub or timber occur constantly and cover the greater portion of the township. The varieties are composed of poplar and balm of Gilead, chiefly. Grasses grow in the marshes and some of them would make hay. Good pasturage may be obtained now in places amongst the lighter scrub. Much of the scrub land could be converted into grass land by clearing. Waters are all fresh and generally permanent. No lakes were found to survey. Carrot river crosses the township running from west to east and runs in a comparatively narrow valley about one hundred feet in depth. It has a strong current, and at the time of the survey (a period of low water) was from three to six feet deep. During spring freshets the river must have been forty feet higher, as indicated by its banks and the float amongst the scrub above the channel. Probably water power might be developed along this river. Deep water in this river would always be confined within its valley. No other creeks or streams were met with, worthy of note. Seasons of much precipitation would cause the level, flat land of this township to be too wet for grain growing. Early fall frosts are liable to occur in this section. Poplar wood for fuel may be obtained everywhere. No coal or lignite was seen. No rock for stone quarrying was discovered. No economic minerals were found. Game was not found in abundance. Bears, as usual, are common. Indians were met with carrying carcasses of deer slaughtered in the neighbourhood.—*G. B. Abrey, D.L.S., 1904.*

Township 48.—I proceeded to this survey from Toronto by way of the Canadian Pacific Railway to Winnipeg and thence by the Canadian Northern Railway to the village of Melfort. At Melfort I completed outfitting, made some surveys southeasterly of that place, returning crossed the Canadian Northern Railway at the village of 'Star City' and went northeasterly through the settlements, crossed Carrot river in township forty-seven in range fifteen, and went westerly along the higher land on the north side of that river cutting roads as we went. The soil is generally a deep black loam often not excavated through in digging pits eighteen inches deep. If drained and cleared it would make good farming land, with less labour the country is suitable for ranching. There is no prairie, the whole township being covered with a small growth of poplar, balm of Gilead, willows, &c., most of this not exceeding

four inches in diameter. The whole township is very similar. There are not many hay marshes, but grass could be grown and hay obtained by clearing the scrub in the lower land. Waters are all fresh, but not very abundant this season. Some small streams are found running in ravines of considerable depth, most of these creeks would appear to be permanent. They would not subject any considerable areas to flooding. No lakes or streams were found requiring a survey. There are no waterfalls or water powers. The country is subject to early fall frosts. Fuel may be obtained in all places from the poplar timber found growing. No coal or lignite was seen. No stone quarries were found. No economic minerals were discovered. Game is not plentiful. Some ducks were seen, bears, as usual, are about. A few Indians were met with hunting for deer.—*G. B. Abrey, D.L.S., 1904.*

Range 17.

Township 39.—This township is situated about one hundred and twenty-five miles from the Canadian Pacific railway, Duck Lake station. The best road to reach it is from Duck lake, passing by Batoche, through the Indian reserve, 'One Arrow,' and then taking the Prince Albert road, as far as township 40, range 23. from there a first class trail has been opened. The nature of the soil is black loam from seven to eleven inches, and the western part, which is not covered with wood, is first class for farming. The surface is level and inclining southward; the greater part of it is covered by timber or small willow; the eastern half is covered by large poplar and cottonwood of ten to twelve inches in diameter. There is a very large hay marsh situated in the following sections: 4, 9, 16, 21, 28, 33; the hay is first class, and there is about one hundred and fifty tons in every section. Water is plentiful, very good and permanent; the land is not liable to be flooded. There are five large lakes, two of which contain fish. There is no water power. The climate is good and there are no summer frosts. There is plenty of dry timber to be used as fuel. There is no sign of coal or minerals of any kind. There are no stone quarries. Game is plentiful. Deer, antelope, fox, wolf, badger, muskrat, rabbits and snipe, of all kinds abound.—*C. E. Lemoine, D.L.S., 1904.*

Township 40.—I proceeded to this survey by the Canadian Northern railway to the village of Melfort (then at the end of the constructed part of the railway). I gathered my outfit at Melfort and went to townships 43 and 42, which I subdivided. I then cleared a road across township 41, into this township. The road was made passable for wagons the whole way from where it branched off from the Melfort road. The soil is black loam of good depth and underlaid with a clay subsoil. Much of the land is suitable for general farming, and other portions would make ranch grounds. The township is covered with scrub generally, poplar, and, balm of Gilead, often of tree dimensions and large enough for building into houses; again some of the scrub is light and scattered with openings over a good portion of the southern and western parts, these open places developing into large sized prairies in the adjoining townships. A good many shallow ponds of considerable extent are found but were not surveyed on account of their shallowness, and their fluctuating shorelines. These in dryer seasons would yield hay. The uplands where not too heavily timbered yield abundance of peavine and excellent pasturage over large areas may be obtained. The water is all fresh the larger and deeper lakes are probably permanent and so also are the creeks found in the western side of the township. The land would not be subject to flooding except locally from wet seasons. There are no water powers. Frosts are liable to damage the grain crops in early fall before harvesting. Much damage was done to the wheat in the neighbourhood during the present season from frost at that time. Poplar wood for fuel is to be found throughout the township. There are no stone quarries. No economic minerals were seen and no lignite was discovered. But little game was seen; prairie chickens would seem to have abandoned the neighbourhood for a time at least.

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Ducks as usual are to be seen in the ponds and marshes. Bears bothered our caches. This township is one of the best that I have subdivided for several years.—*G. B. Abrey, D.L.S., 1904.*

Township 42.—I went to the survey of this township by way of the Canadian Pacific railway to Winnipeg and from there by the Canadian Northern railway to the village of Melfort. This place being then at the end of the constructed road. From Melfort I went southeasterly along a road made to a sawmill (situated beyond this township) into township 43 in the same range. I then cleared and made roads leading into the township now being reported. The soil is black loam 2 to 12 inches in depth, and with generally a subsoil of clay or clay loam. The township is pretty wet, the wetter portions would make ranching farms while the dryer parts would do for general farming. Timber or scrub covers the ground. A small patch of prairie extends into the southwest corner from the townships lying westerly of this one. There is a greater area covered with scrub than with large timber; the timber occurs in clumps and patches all over the township, and is composed of poplar, balm of Gilead and birch, and runs up to 25 inches in diameter. Marsh grasses suitable for making into hay are to be found in the marshes and meadows, but not in large quantities. Good pasturage is to be had on the dry lands from the pea vines; many rosebushes are mixed with the vines. The waters are all fresh, a good many shallow lakes are met with. Barrier river crosses the township and widens in places into lakes. Water is abundant and probably is permanent in supply. The land would not flood from overflowing of lakes or streams. There is no water power. The country is subject to early fall frosts. During this season much of the wheat in the settlements nearby was damaged by frost before harvesting. Poplar wood for fuel may be obtained everywhere. No coal or lignite was seen. No stone quarries exist and no economic minerals were discovered. Bears would seem to be numerous. Ducks frequent the lakes and marshes, other game was not plentiful.—*G. B. Abrey, D.L.S., 1904.*

Township 43.—I reached this township through Melfort, a station on the Canadian Northern railway. From Melfort, I travelled over a road southeasterly running through the township to a sawmill situated farther away. The sawmill road has a good deal of travel over it and is in good condition. The surface soil is black loam of good depth and usually underlaid with a clay subsoil. The dryer parts are suitable for wheat growing or general farming, while the lower or wet lands are good ranch grounds. No prairie exists. The surface is covered with scrub and timber; more of the former than of the latter, and more timber in the northern and western parts than in the southern and eastern sections. The timber is in patches amongst the scrub, and is composed of poplar, balm of Gilead and spruce. The spruce is generally found in clumps. The timber runs up to 18 inches diameter. Some hay might be made, but not in great quantities. The grasses are the marsh varieties in the low places, and in the uplands much pea vine is found, with a thick growth of rosebushes generally amongst it. The water is all fresh and there is plenty of it, and probably the supply is permanent. In wet seasons a good deal of the land would be too wet for general farming. It could only be flooded by excessive rain or snow fall locally. There are no water powers. Frosts may and do occur in early fall before grains are harvested, during some years. Plenty of poplar wood for fuel is found everywhere. No coal or lignite was seen and no stone quarries exist. No minerals of economic value were found. Bears are plentiful. Ducks and prairie chickens are obtained but are not abundant. Perhaps the season this year for game was not as good as the average.—*G. B. Abrey, D.L.S., 1904.*

Township 47.—This township is very much like the one west of it. Carrot river enters the township in section 7 and flows easterly across sections 7, 8 and 9, in a very crooked channel fifty to fifty-five feet wide and ten to fifteen feet deep. It gradually straightens and widens to sixty and seventy feet in crossing sections 10, 11, 12 and 13. Rapids occur in low water, in sections 11, 12 and 13. The north portion of the town-

ship is comparatively level. The sections just north of the river and all south of it are rolling; sections 11, 12 and 13 are from rolling to hilly. Many fresh water sloughs are found all over the township, and they are very numerous in the north portion. They are not as large as in the township to the west, and gradually become smaller on the east side of the township. A lake was traversed in section 18, one in sections 22 and 23, and one in sections 19, 20, 29 and 30. This latter one has pike and jackfish in it. It is a favourite resort of wild duck and fort à la Corne Indians make regular hunting trips to it. The whole township is covered with poplar, balm of Gilead, willow and alder underbrush, and heavy bluffs and scattered trees of poplar and balm of Gilead, six to ten inches in diameter, on all sections north of the river. There are odd scattered trees south of the river, but not many heavy bluffs. A great amount of dead timber that will make good fuel is found all over the township. Building timber, other than for very rough log buildings, is scarce. The soil throughout the whole township is mostly a rich black loam or sandy loam, and clay subsoil. Nearly all that portion north of the river is unfit for cultivation until drained, but when drained will make good farms. Nearly all south of the river can be cultivated as at present, and I think will be readily homesteaded. A drainage system extending over several townships would be a simple matter practically, as there is ample fall for the purpose, but under present conditions I do not think the resulting benefits would warrent the expenditure. The weather throughout December was moderate. The snow fall was light, being not more than ten inches by the last of the month. No stone, excepting boulders in the river in the east half of the township, was seen, and no minerals. Water power could be developed in several places in the river, in the east half of the township; but the water is variable, so a steady power could not be got for any purpose. Muskrats, rabbits and coyotes abound in great numbers. Partridge are plentiful. There are a number of mink and fox and a few otter and jumping deer.—*Wm. R. Reilly, D.L.S., 1904.*

Township 48.—The southeast portion of the township is undulating with numerous sloughs and muskegs. The southwest corner is nearly level, very marshy. The west side is from undulating to rolling, running into sand ridges at the north with many muskegs. The interior and east side is slightly rolling, becoming more so as you go north. The north side is rolling, not many sloughs. The whole township is wooded, the southwest quarter covered with a dense growth of underbrush and scattered trees of poplar, balm of Gilead and spruce; odd clumps of spruce six to fifteen inches in diameter along the creek. The remainder of the township is mostly small spruce and tamarac on the muskeg, and heavy spruce and poplar underbrush on the high ground, willow and alder in the depressions and odd clumps and belts of spruce, tamarac and jackpine six to fifteen inches in diameter, many scattered trees, poplar bluffs six to ten inches in diameter and much dead wood. Several log shanties were built this winter and a portable saw mill was placed on the northwest quarter of section 18. Settlers were taking out logs on permits for their own use, and from appearances, not much saw mill timber will be left on this, or the township to the west of it, after they finish this winter's work, as timber for that purpose is very limited. There is abundance of timber for rough log building, fencing and fuel. A winter packtrail (mail trail) from Fort à la Corne to Cumberland House, passes through sections 30, 29, 32, 33 and 34. A creek rises in section 8 and runs easterly out of the township in section 13, another one rises in section 18, running north through several muskegs and out of the township in section 33. These creeks are natural outlets to the Saskatchewan of a continuous network of sloughs, marshes and muskegs, beginning in the southeast quarter of township 48, range 19, and stretching across range 18 into this township, and together with other outlets to the south, would naturally be used in any system of drainage to reclaim this district. The soil is in low spots fair sand loam, on high ground light sand and very poor and not fit for cultivation. A limited quantity of hay can be cut mostly in the southeast quarter of the township.

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The weather in January was very steady and bright, moderately cold but pleasant and hardly a foot of snow. There is no stone and no minerals. Game consists of rabbits, coyotes and partridge, all of which are plentiful. Mink and fox are scarce; there are some jumping deer, and odd tracks of moose.—*Wm. R. Reilly, D.L.S., 1904.*

Range 18.

Township 47.—Carrot river enters this township in the southwest quarter of section 18 and flows easterly in a very crooked channel 40 to 50 feet wide and 10 to 15 feet deep, through sections 7, 8, 9, 10, 3, 2, 11 and 12. The banks are in most places fringed with a heavy growth of willows, especially the right bank through sections 7, 8 and 9. The surface for a distance of about a mile north of the river and all south of the river is pretty rolling, the remainder of the township from undulating to rolling. Numerous sloughs are found all over the south part of the township and from a short distance north of the river the north part of the township is a network of sloughs and marshes, and perhaps at times over one-fourth of the surface is covered with water. A large lake, with good shore line, at the corners of section 9, 10, 15 and 16, and one to the east side of section 13, were traversed. Several large stretches of water were found in the north part of the township, but owing to marshy receding shores they were not traversed. The whole township is covered with scattered bluffs of poplar and balm of Gilead, with much dead timber and a heavy growth of poplar and balm of Gilead, willow and alder underbrush. The heaviest bluffs are in sections 4, 5, 33, 34 and 35. Throughout the whole township a great quantity of fuel is available, but building timber is limited. A trail from Fort à la Corne to the lake in sections 19, 20, 29 and 13, township 47, range 17 runs along a low ridge a mile south of the north boundary. This ridge is a dividing line or watershed between Carrot and Saskatchewan rivers. The soil of the north part of the township is a fair sand loam and if drained would make fairly good farms, but under present conditions is not fit for cultivation. The land lying along the north side of the river and all south of it, is mostly a good sand or clay loam, clay subsoil, well suited for mixed farming and will be readily homesteaded. Hay can be cut around a great number of the sloughs in the township. The weather during the survey was mild, with very little wind. The sloughs were not frozen hard enough to carry until about November 25. No stone, water power or minerals were observed. Muskrat, rabbits and coyotes are plentiful. Mink, fox and otter are scarce. A few jumping deer were seen.—*Wm. R. Reilly, D.L.S., 1904.*

Township 48.—The south side of this township is slightly undulating, being for the most part muskeg, swamp and slough. There is a large slough or lake on the east side of section 2, extending north clear across the section, and another on the east side of section 3, extending half a mile north; these have very flat marshy shores, and were not traversed. Going north the surface gradually becomes rolling, inclined to be hilly on the north side of the township. The whole township is wooded. The south is covered with a heavy growth of spruce, tamarac, poplar, balm of Gilead, willow and alder underbrush. Occasional belts and clumps of spruce and tamarac six to twelve inches in diameter are found. Poplar and jackpine six to ten inches in diameter is found on the high ground, and small spruce and tamarac on the muskeg. Going north the surface is covered with jackpine, spruce, poplar and willow underbrush, with belts of jackpine and spruce six to twelve inches in diameter. Large stretches are covered with a thick young growth of jackpine on ground that has of recent years been fire swept. A considerable quantity of standing dry timber six to ten inches in diameter is found in many places. Some fine belts of jackpine and spruce six to twelve inches in diameter occur on sections 33, 34 and 35, but only a

small percentage is at present large enough for railway ties. As stated in report for township 48, range 17, settlers from the south were cutting logs on this township to be manufactured into lumber; the timber for that purpose is very limited, but a great quantity of timber for log building, fencing and fuel is available, and will be a great benefit to settlers to the south for a number of years. The southern part of the township has a fair sand or black loam soil and if drained will make fairly good farms. Toward the north the soil is mostly light sand and is very poor. A winter pack trail (mail trail), from Fort à la Corne to Cumberland house, passes through sections 19, 30, 29, 28, 27, 26 and 25. Very little hay can be cut in this township. The climate in January was bright, cold and pleasant, with very little wind and about a foot of snow. There are no stone quarries or minerals. Rabbits and coyotes are plentiful and a few jumping deer are seen.—*Wm. R. Reilly, D.L.S., 1904.*

Township 49.—I reached this township from Melfort travelling easterly along the Canadian Northern railway to the village of 'Star City,' thence northerly through the settlements, thence I cut roads, crossed Carrot river, surveying some townships on the way, and passed westerly through townships 48 in ranges 15, 16 and 17. It was found that we could not move our outfit into the township now being described because of deep ravines in the way, therefore all of it south of Saskatchewan river was run from camps in township 48 and run in 1904. The part north of the river was run in March of 1905, while the river was frozen over. The outfit was moved from Fort à la Corne down the river on the ice. The soil is generally sandy, with sand hills and ridges in many places, and yields but scanty vegetation. The surface is covered with scattered jackpine trees with scrub of the same, in the sandy places. In the ravines spruce and tamarac are found. The jackpine are of considerable diameter, but are usually of stunted growth and unfit for timber. The spruce and tamarac can be utilized for lumbering purposes. Some of the poplar would make lumber and house-building logs. It grows on the upper flats where not too sandy. But little hay land or pasturage is found. The water is all good for domestic uses. In dry seasons but little would be found except in the river and the ravines. The Saskatchewan flows easterly across the township and is a large rapid river affording navigation for flat-bottomed steamers. Other streams are small. The Saskatchewan was traversed on both banks, and was the only water area surveyed. The land is not liable to flooding. No water powers exist, except it might be that by large expenditure of capital Saskatchewan river could be utilized. Summer frosts occur in the locality. Wood fuel of poplar, tamarac, &c., can be obtained generally. No coal or lignite was seen. No stone quarries were discovered. Much loose stone is scattered along the banks and in the Saskatchewan. No economic minerals were seen. Very little game appeared. Bears as usual are common. Deer of several varieties are sometimes killed. Birds are not numerous. I did not see many indications of fur-bearing animals.—*G. B. Abrey, D.L.S., 1904-5.*

Range 19.

Township 47.—This township is slightly rolling and covered with a heavy growth of poplar, willow and alder underbrush, and poplar bluffs with trees six to ten inches in diameter, with a good deal of dry wood in the bluffs. The bluffs are pretty evenly distributed all over, the heaviest bluffs being in sections 26, 27, 28, 33, 34 and 35. Some small prairie openings are found along the north side of the river, and in sections on the south side of the township. Carrot river enters the township on the west side of section 18, and flows, in a very crooked bed, easterly through sections 18, 17, 16, 21, 22, 23 and out of the township in section 24. This is a narrow stream thirty-five to fifty feet wide running in a channel ten to fifteen feet deep, and in high water has a strong current. At present it is fast drying up. The whole township is dotted

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all over with fresh water sloughs and marshes. They all appear to be very easily drained, as they seem to be nearly all connected one with the other, and in many places there is a strong runway from one to the other. Carrot river is low enough to afford splendid drainage for the whole district. The soil is a good sand loam in the north, gradually running into a rich clay loam in the south, but on account of the many sloughs and marshes, it can only be cultivated in patches. It would not be feasible to make roads on the road allowances without first draining them. This will make a very good township if once drained. A trail, from Melfort to Fort à la Corne, runs through sections 12, 13, 24, 23, 22, 21, 29 and 30. The poplar bluffs will supply good rough building material and fuel. A quantity of hay can be cut around many sloughs in the township. The climate through July was fine. There was plenty of rain, no frost, and much bright weather. There is no stone, nor minerals of any kind. Small game is plentiful, large game scarce.—*Wm. R. Reilly, D.L.S., 1904.*

Township 48.—This township was reached by trail from Sintaluta, after many efforts were made to get by rail to Prince Albert. I left Sintaluta on the 9th day of May, fording the Qu'Appelle valley at Blackwood crossing, through nearly half a mile of water, thence by way of Saltoun and Canadian Pacific railway grade to the Humboldt trail. Leaving the Humboldt trail a few miles north of Hoodoo lake and crossing over to Carrot river and following Carrot river to Kinistino, thence to Fort à la Corne, and east into the township on the 23rd day of May. I found the trail throughout very wet, the portion across the alkaline plains, between Touchwood and Humboldt, being almost impassable. The Hudson's Bay Company agent at Touchwood informed me that there was more water this year, than in any previous season in his recollection. The north half of the township is rolling, the west side of sections 30 and 31 rough and broken. The southwest quarter is slightly rolling, and the southeast quarter nearly level, with long stretches of muskeg. Some fine clumps of jackpine and spruce, six to twelve inches in diameter, are found on the north half of the township, the thickest and largest patches being in sections 31, 32, 33, 34 and 35. The south limit of the pine belt, which includes jackpine, spruce and tamarac, is through sections 18, 17, 16, 10, 11 and 12. From this line north the surface is covered with patches of jackpine, spruce, tamarac and poplar, six to ten inches in diameter, with intervening heavy underbrush. The surface covered by underbrush is far in excess of what is timbered. Towards the south the surface is covered with bluffs of poplar and balm of Gilead, with intervening heavy poplar, alder and willow underbrush. The soil of the north half of the township is light sand, not fit for cultivation, and as you go south it gradually runs into a sand loam; the two south tiers of sections being a fair sandy loam. The south half of the township is badly broken by fresh water sloughs and muskegs and will be of no use for cultivation until drained. A good drainage can be obtained, but under present conditions of the country, I hardly think the land would be worth the expenditure. The township contains a great amount of fuel, and building material which, I think, would be well to reserve for the use of settlers, as there is a good stretch of country, to the south, not well supplied with building timber and it is fast settling up. A pack trail, from Fort à la Corne to Cumberland house, crosses sections 18, 17, 16, 15, 14, 23 and 24, with a branch through sections 8, 5 and 4. A portable sawmill has been at work close to the trail, on the east side of Hudson's Bay Company reserve and on section 33, and farther north with trails leading thereto, the timber for sawing being taken off this township and farther north. A quantity of hay can be cut around many sloughs in the township. The weather through June and July was good: slight frosts in June, but not damaging, frequent showers with plenty of rain, and much bright weather. No stone of any kind was seen, excepting boulders along Saskatchewan river. There are no minerals. Duck, partridge, rabbits and muskrat are very plentiful. Large game is scarce, but some traces of bear were seen.—*Wm. R. Reilly, D.L.S., 1904.*

Township 49.—I reached this township from Melfort, travelling easterly along the Canadian Northern railway to the village of 'Star City,' thence northerly through the settlements; after which I cut roads, forded Carrot river, surveying some townships on the way and passed westerly through townships 48, in ranges 15, 16, 17 and 18, and followed a lumber road leading to near the Saskatchewan and not far from the centre of the township. All of that part of the township south of the river and some of it beyond was surveyed from a camp on this road during the fall of 1904. That part farther north was run in March of 1905, while the river was frozen over, the outfit being moved down the river on the ice. The mounding was done in May of 1905. The soil is generally very sandy, with sand hills and ridges in many places, and yields very scanty vegetation. The township is covered with scattered jackpine, and jackpine scrub in the more sandy portions. In the ravines spruce and tamarac are found. Some of the trees are of considerable diameter, but are of stunted growth. The spruce and tamarac can be made into lumber, and considerable of it has already been cut and removed. Some of the poplar might be cut into boards also. It would make timber for log houses. The best of it grows on the upper flats where not too sandy. Hay land and pasturage are scarce. All waters found are good for domestic use. In dry seasons, but little water would be found except in ravines and in the river. Saskatchewan river flows easterly through the township. It is a large rapid stream, and affords navigation for light draught streamers, and rafting of timber. All other streams are small. The Saskatchewan was traversed on both banks and was the only water surveyed. The land is not liable to flooding. No water powers exist, except it might be that of the Saskatchewan. This river could be made available. Summer frosts are liable to occur on this locality. Fuel of poplar, tamarac and other wood can be obtained generally. No coal or lignite was seen. No stone quarries were found. Much loose stone and boulders are scattered along the shores of the Saskatchewan. No economic minerals were discovered. Very little game was seen, bear, as usual, are common. Deer of several varieties are sometimes killed. Birds are not numerous. Not many indications of fur-bearing animals were observed.—*G. B. Abrey, D.L.S., 1904-5.*

Range 25.

Township 4.—This township is approached by trail from Moosejaw, 72 miles to the north. The soil is sandy loam, with clay subsoil. Adapted for mixed farming. The surface is highly rolling open prairie. A lake and numerous sloughs contain good water. There is no timber of any quantity or quality, but hay of good quality is very plentiful. There is no water power. Climate is dry and bracing and there are no summer frosts. Fuel is conveniently obtained from bush to the west. No coal, minerals or exposed rock was found. Prairie chickens and ducks are fairly plentiful.—*A. F. Martin, D.L.S., 1904.*

Township 5.—The soil is black loam and some sandy loam with clay subsoil. The surface is highly rolling, broken prairie, with numerous ravines, suitable for mixed farming. There is no timber of any quantity or quality. Hay of good quality is very plentiful. There is a large lake in this township and numerous sloughs with good water. No water power exists in the township. The climate is dry and bracing and there are no summer frosts. Fuel is obtained from the bush about 20 miles to the west. No coal, stone or minerals were noticed. Prairie chickens and ducks are plentiful.—*A. F. Martin, D.L.S., 1904.*

Township 9 (N. By.)—The soil is mostly sandy loam, with gravelly and clay subsoil. This township is approached by trail from Moosejaw, forty miles north. The surface is broken, highly rolling prairie, rather stony and is adapted for mixed farming. There is no timber. Good hay is plentiful. The sloughs contain good water.

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There are no water powers. The climate is dry and bracing and there are no summer frosts. Fuel is obtained from the southwest. No coal, stone quarries or minerals were observed. Prairie chicken and duck are plentiful.—*A. F. Martin, D.L.S., 1904.*

Township 10.—This township is approached by trail from Moosejaw, thirty-six miles north. The soil is sandy loam and some black loam with sandy, gravelly and clayey subsoil. The surface is rough, rolling, broken prairie, rather stony in places and is adapted for mixed farming. There is no timber. Hay of good quality is plentiful. Small lakes and sloughs abound with good water. There are no water powers. The climate is dry and bracing and there are no summer frosts. Fuel is obtainable from the southwest. No coal, stone quarries or minerals were observed. Prairie chicken and duck are plentiful.—*A. F. Martin, D.L.S., 1904.*

Township 11.—This township is approached by trail from Moosejaw, twenty-eight miles to the north. The soil is black loam, some sandy loam, with clay subsoil. The surface is highly rolling broken prairie. There is no timber. Hay of good quality is plentiful. There are numerous sloughs with good water. There are no water powers. The climate is dry and bracing with no summer frosts. Fuel is obtained from the southwest. No coal, minerals or stone quarries were observed. Prairie chicken and duck are plentiful.—*A. F. Martin, D.L.S., 1904.*

Township 12.—This township is approached by trail from Moosejaw, twenty-four miles north. The soil is sandy loam, with clay subsoil and is adapted for mixed farming. The surface is highly rolling, broken prairie. There is no timber. Hay of good quality is plentiful. There are numerous sloughs with good water. There are no water powers. The climate is dry and bracing and there are no summer frosts. Fuel is obtainable from the southwest. No coal, stone quarries or minerals were observed. Prairie chicken and duck are plentiful.—*A. F. Martin, D.L.S., 1904.*

Range 26.

Township 10.—The soil is sandy loam, with clay subsoil and is adapted for mixed farming; the soil in section 8 is alkaline. The surface is highly broken prairie. There is no timber of any quantity or quality. Hay of very good quality is very plentiful. There are numerous sloughs containing good water. There are no water powers. The climate is dry and bracing and there are no summer frosts. Fuel can be obtained from bush six miles distant. No coal veins, stone quarries or minerals were observed. Prairie chicken are fairly plentiful.—*A. F. Martin, D.L.S., 1904.*

Township 11.—This township is approached by trail from Moosejaw, thirty miles north. The soil is sandy loam, twelve inches deep, with clay and gravelly subsoil and is adapted for mixed farming. The surface is highly rolling, broken prairie. There is no timber of any quantity or quality. Hay of good quality is very plentiful. There are about seven small lakes and numerous sloughs with good clear water. There are no water powers. The climate is dry and bracing and there are no summer frosts. Fuel is obtained from bush to the southeast. No coal, stone quarries, or minerals were observed. Prairie chicken and duck are plentiful.—*A. F. Martin, D.L.S., 1904.*

Township 12.—This township is approached by trail from Moosejaw, twenty-four miles north. The soil is sandy loam with clay subsoil and is adapted for mixed farming. The surface is highly broken, rolling prairie. There is no timber. Hay of good quality is plentiful. There are numerous sloughs with good water. There are no water powers. The climate is dry and bracing with an even temperature and no summer frosts. There is no timber of any quantity or quality. Fuel can be obtained from bush six miles distant. No coal veins, stone quarries or minerals were observed. Prairie chicken and duck are plentiful.—*A. F. Martin, D.L.S., 1904.*

Township 50.—This township is reached by a trail from Prince Albert going north, which in summer skirts around several marshes which the winter trail crosses.

I do not know the condition of the summer trail, having travelled only over the winter trail which is used by the lumbermen who are operating in limits farther north. The soil is generally of a good quality and will be well suited for agricultural purposes. The surface is slightly rolling, with no high hills. There are many good hay swamps scattered throughout the township, the high land is all timbered with poplar suitable for fuel and fencing, but very little suitable for building purposes, being mostly under nine inches in diameter. The water is fairly good, but in some places tainted with alkali. Little Red river enters the township from the north in section 32 and crosses southeasterly through the township, passing out in section 1. The average width of this river is about one chain, is very crooked with a rapid current and there are no falls. There are no water powers, minerals or quarries. There were a few red deer seen in the township.—*David Beatty, D.L.S., 1904.*

Township 51 (E. By.)—The country is rolling, without any high hills, but with many willow flats or sloughs. The soil is generally a brown loam and will be good farming land. The timber is mostly poplar, but very little of it exceeds six inches in diameter and is of no commercial value except for fuel and fencing. There are no minerals, quarries or water powers.—*David Beatty, D.L.S., 1904.*

Township 52 (N. & E. Bys.)—The country is rolling without any high hills, but with many willow flats or sloughs. The soil is generally a brown loam and will be good farming land. The timber is mostly poplar, but very little of it exceeds six inches in diameter and is of no commercial value except for fuel and fencing. There is some jackpine in patches along Bittern creek, but of a poor quality. There are no minerals, quarries, or water power. Indians say there are moose, elk and red deer.—*David Beatty, D.L.S., 1904.*

Range 27.

Township 10.—This township is approached by trail from Moosejaw, thirty miles north. The soil is generally sandy loam averaging twelve inches deep, with clay subsoil and is adapted for mixed farming. There is no timber. Hay of good quality is plentiful. The climate is dry and bracing and there are no summer frosts. Fuel can be obtained from bush to the south. There are numerous sloughs containing good water. No coal, stone quarries or minerals were observed. Prairie chicken and duck are plentiful.—*A. F. Martin, D.L.S., 1904.*

Township 11.—This township is approached by trail from Moosejaw, thirty miles north. The soil is sandy loam, with some black loam, having clay subsoil and is adapted for mixed farming. The surface is highly rolling, open prairie. There is no timber. Hay is plentiful and of good quality. There are numerous sloughs containing good clear water. There are no water powers. The climate is dry and bracing with an even temperature and no summer frosts. Fuel is obtained from bush about six miles distant. No coal, stone quarries or minerals were observed. Prairie chicken and ducks are plentiful.—*A. F. Martin, D.L.S., 1904.*

Township 12.—This township is approached by trail from Moosejaw, twenty-four miles north. The soil is a sandy loam generally, but a black loam in some places, with a clay subsoil and is adapted for mixed farming. The surface is highly broken, open prairie. There is no timber. Hay is plentiful and of good quality. There are numerous sloughs containing good water. There are no water powers. The climate is dry and bracing, with an even temperature and no summer frosts. There is no timber of any quantity or quality. Fuel can be obtained from bush six miles distant. No coal veins, stone quarries or minerals were observed. Prairie chicken and ducks are fairly plentiful.—*A. F. Martin, D.L.S., 1904.*

Township 50.—This township may be reached from Prince Albert by the Sturgeon lake road, which passes through the western part of the township, or it may be

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reached in the winter by what is called the Shannon trail, which passes about the centre of the township from south to north. The country is fairly level, with numerous ponds and marshes, many of which are hay swamps in dry seasons. The greater part of the township will be better adapted for grazing than agricultural purposes. About one-third of the township is timbered with jackpine comprising the greater part of the southeast quarter and the centre. The best half of the pine has been cut for railroad ties. The part timbered with jackpine is sandy, while the part timbered with poplar and willows is loam suitable for farming purposes. The water in Shell river which crosses the southwest corner of the township, is fresh, but that in many of the ponds and marshes is tainted with alkali. There are no water falls, minerals or quarries in the township. There are a few red deer.—*David Beatty, D.L.S., 1904.*

Township 51.—This township may be reached from Prince Albert by the Sturgeon lake road which passes through the western part of the township, or it may be reached in winter by what is known as the Shannon trail passing north and south through about the centre of the township. Sturgeon river passes through the west side of sections 19, 18, 7 and 6 and Little Red river passes diagonally across section 36. The water in both these rivers is good, but that in most of the ponds and marshes is tainted with alkali. The surface of the country is generally level and timbered with poplar and willow, the soil is mostly a loam suitable for farming purposes also well adapted to grazing with many small hay swamps in dry seasons. The greater part of the timber is suitable only for fuel and fencing, but there are small clumps with trees from ten to twelve inches in diameter that would be suitable for building. There are no water falls, minerals or quarries in the township. There are a few red deer.—*David Beatty, D.L.S., 1904.*

Township 52 (N. By.)—The country is rolling without any high hills but with many willow flats or sloughs. The soil is generally a brown loam and will be good farming land. The timber is mostly poplar, but very little of it exceeds six inches in diameter and is of no commercial value except for fuel and fencing. There are no minerals, quarries or water powers.—*David Beatty, D.L.S., 1904.*

Range 28.

Township 3.—This township is approached by trail from Moosejaw, seventy miles north. The soil is sandy loam with clay subsoil and adapted for mixed farming. There is no timber of any quantity or quality. Hay is fairly plentiful. Water is to be obtained of good quality. There is no water power and very few sloughs. Climate is dry and bracing, no summer frosts were experienced. Fuel is obtained from bush convenient to the west of this township. There are no coal veins, stone quarries or minerals. Prairie chickens and ducks are fairly plentiful.—*A. F. Martin, D.L.S., 1904.*

Township 6.—This township is approached by trail from Moosejaw, 60 miles north. The soil is sandy loam with clay subsoil suitable for mixed farming. The surface is highly broken, open prairie and there is no timber. Hay of good quality is fairly plentiful. There are numerous sloughs with good water, but no water power exists in the township. The climate is dry and bracing and there are no summer frosts. Fuel is obtained conveniently from bush to the west. No coal, stone or minerals were found. Prairie chickens and ducks are plentiful.—*A. F. Martin, D.L.S., 1904.*

Township 50.—This township can be reached by way of the Sturgeon lake road from Prince Albert, which enters the township from the east in section 14 and passes through sections 25, 26 and 35, and the Green lake trail which branches off the Sturgeon lake road, passes through sections 1, 2 and 3. Sturgeon river enters the town-

ship from the north in section 35 and joins Shell river (in section 26) which runs southeast through sections 27, 26, 25 and passes out of the township through section 24. Both of these streams have a rapid current and are each about one chain wide. The surface is rolling and timbered with alternate areas of jackpine and poplar. The greater part of the township is light and sandy soil and will be better adapted to grazing than agricultural purposes. There are no hay swamps in the township. The water is good. There are no water powers, minerals or quarries in the township. There are a few red deer.—*David Beatty, D.L.S., 1904.*

Range 29.

Township 4.—This township is approached by trail from Moosejaw, 72 miles north. The soil is sandy loam, some black loam with clay and gravelly subsoil. The surface is highly rolling, broken prairie suitable for mixed farming. There is no timber. Hay is of good quality and plentiful. There is a large lake and numerous sloughs with good water. No water powers exist in the township. Climate is dry and bracing, no summer frosts were experienced. Fuel is obtained from bush to the west. No coal, exposed rock or minerals were found. Chickens (prairie) and ducks are plentiful.—*A. F. Martin, D.L.S., 1904.*

Township 5.—This township is approached by trail from Moosejaw, 65 miles north. The soil is chiefly sandy loam with clay and gravelly subsoil, adapted for mixed farming. No timber of any quantity or quality exists, but there is some small poplar up to 3 inches in diameter and some ash. Hay of good quality is plentiful. There are numerous sloughs and springs with good clear water. The surface is very broken, rolling, prairie, scrubby and alkaline in parts. There is no water power. Climate is dry and bracing and there are no summer frosts. Fuel, poplar is to be obtained conveniently. No coal veins, exposed rock or minerals were noticed. There are three houses in section 36. Prairie chickens and ducks are fairly plentiful.—*A. F. Martin, D.L.S., 1904.*

TOWNSHIPS WEST OF THE THIRD MERIDIAN.

Range 1.

Township 49.—This township is reached from Prince Albert by what is known as the Shell brook road, which is a good graded road built by the government and crosses Shell river by an iron bridge. This road enters the township on section 13 and crosses to the west, leaving it in section 18, also what is known as Green lake trail enters the township from the north on section 35 and crosses said section westward and section 34 leaving the township on section 33 to the north. The Saskatchewan river forms the greater part of the south boundary of the township. The soil is sandy and will when cleared be better adapted for grazing than for agricultural purposes. There is a marsh with tamarac and willows scattered throughout which enters the township near the northeast angle and crosses diagonally to and across section 7. The surface is generally rolling and timbered principally with jackpine, the best part of which has been taken out for railroad ties. There are scattered small areas of poplar principally in the northeast quarter of the township. I saw no hay swamps in the township; the water is good. There are no water powers, minerals or quarries. There are a few red deer.—*David Beatty, D.L.S., 1904.*

Township 50.—This township can be reached by what is known as the Green lake trail, which branches off to the west from Sturgeon lake road about 12 miles north of Prince Albert. This trail enters the township in section 1 and passes out into township 49 in section 2 and again into the township in section 4, thence northwesterly passing out in section 7. Shell river crosses the northeast corner of the township

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entering from the north in section 35 and passing out in section 36. The soil is principally a good loam and is well suited for agricultural purposes. The surface is rolling and well timbered with poplar suitable for fuel and fencing, but not exceeding 9 inches in diameter. There are very few hay marshes in the township, the principal one being in sections 12 and 13. The water is mostly fresh, but in some places slightly tainted with alkali. There are no water powers in the township. There are no minerals or quarries. There were a few red deer seen in the township.—*David Beatty, D.L.S., 1904.*

Range 2.

Township 51 (E. By.)—The country is rolling and timbered with poplar and spruce, but it has been cut over by the lumbermen and there is very little merchantable timber left. The soil is generally light, being a sandy loam, but in places a good brown loam and will make fairly good farming land. There are no minerals, quarries or water powers. Indians say there are moose, elk and red deer in this district.—*David Beatty, D.L.S., 1904.*

Township 52 (E. By.)—The country is rolling and timbered with poplar and spruce, but it has been cut over by the lumbermen and there is very little merchantable timber left. The soil is generally light, being a sandy loam but in places a good brown loam and will make fairly good farming land. There are no minerals, quarries or water powers. Indians say there are moose, elk and red deer in this district.—*David Beatty, D.L.S., 1904.*

Range 10.

Township 27.—This township can be reached by the old Bone trail from Saskatoon. It is heavily rolling, open prairie in the west and rolling in the east. The northern part is rolling and broken near the valley of Red Deer lake, crossing sections 31, 32 and 33. A marshy lake crosses sections 17, 16 and 21. The soil is sandy loam with sandy subsoil. Class 1 and 2 and in places through the centre of the township, there is a clay loam with clay subsoil. It is very good land for farming. There is no timber, but hay can be cut in the marshes in a dry season. There is a permanent supply of good water in the township. There is fresh water in all the marshes, but it is alkaline in Red Deer lake and unfit for drinking. There are no springs. There are no streams in the township and no water power. No summer frost was experienced and none until very late in the fall. There is no fuel except along Red Deer lake. No coal or lignite veins were noticed in the township and there are no stone quarries or minerals. Wild ducks, prairie chickens and antelope are found.—*J. A. Côté, D.L.S., 1904.*

Township 28.—This township can be reached by the old Bone trail from Saskatoon. The north is rolling and broken, open prairie to quite level down in the valley of Red Deer lake which crosses sections 6, 4, 3, 10, 2, 11 and 12. Its valley is from 140 feet to 150 feet deep and one mile wide. The south bank is well wooded with poplar, ash and willow. South of the lake the country is heavily rolling and broken. Soil clay loam with clay subsoil in the east and north. In the south and west there is sandy loam with sandy subsoil, class 1 and 2. Very good land for farming. There is no timber. The hay marshes are scattered along the north boundary. There is a permanent supply of good water in the township. There is fresh water in all the marshes, but alkaline in Red Deer lake and unfit for drinking. There are no springs and no streams in the township. There was no summer frost and none until very late in the fall. There is fuel only along Red Deer lake. No coal or lignite veins were found in the township. No stone quarries suitable for quarrying and no minerals. Wild ducks, prairie chickens and antelope are found.—*J. A. Côté, D.L.S., 1904.*

Township 29.—This township is best reached by the Bones trail from Saskatoon, though Hanley will be a more convenient post office so soon as there is a ferry across the Saskatchewan nearby. The surface of this township is rather a gentle rolling prairie—well dotted with sloughs of various sizes. The soil is generally a rather light clay loam and would seem to be well adapted to agriculture and kindred pursuits. Wood, for fuel, &c., had to be brought from the banks of the Saskatchewan, some fifteen miles away, there being none in the township. A few antelope and some wild fowl were seen. There are no creeks nor water powers in this township, but at the time of survey there was plenty of water in the sloughs. No economic minerals were seen.—*M. L. Gordon, D.L.S., 1904.*

Township 30.—This township is best reached by the Bones trail from Saskatoon, though Hanley would be nearer when there is a ferry at the river. In wet weather the trails in the country spoil quickly, but in dry weather there is good travelling even over the prairie. Generally speaking the soil in this township is fine clay loam, well adapted to agriculture. Along the creek, which flows diagonally across the township, there is however a good deal of stone, from gravel to boulders in size. This creek and the numerous sloughs would supply ample water for domestic use, &c., but none for water power. The surface of the township is a rolling prairie, broken by coulées, the largest being that in which the creek-bed lies. There is no timber in the township; settlers haul wood for fuel and poles from the banks of the Saskatchewan, fifteen miles away. No minerals were noticed and very little game. No frosts were experienced during the survey (June). Several settlers have located in this township and there would be many more were a railroad assured.—*M. L. Gordon, D.L.S., 1904.*

Township 31.—Using Saskatoon as a base this township is reached by taking the Bones trail and the branch of it skirting the west side of a lake; by this route it is about 65 miles. A trail east of the lake would be much shorter, but on the completion of the ferry now building on the Saskatchewan in township 31, Hanley would be a more convenient town and post office, being only about half the distance to Saskatoon. The soil varies, being a rich loam in the southwest part of the township, very sandy in the eastern part and heavy clay in the northern part. The southern, western and central parts of this township should make excellent farming land, while the eastern part would make good grazing land, but the northern part would appear to be little good for anything. The country is generally a rolling prairie, but the north part is mostly a boggy flat, broken by sloughs and muskegs. There is no timber only a very little scrub but there is a limited supply of poplar poles to be had in the small hills near the east outline; to these the settlers also have to look for fuel. There is a good sized creek flowing north through this township; the current is slow and it is not suited for power, though it is quite deep (4 or 5 feet. and so is not likely to dry up. Sloughs are numerous, mostly of good water. No frosts were noted. No minerals were seen nor any stone. Game is scarce, though a few antelope were seen and one or two deer. Some ducks and prairie chickens were also seen. Settlers are pressing into the surrounding country and this township is likely to be soon settled. The settlers are mostly from the United States, and they say it is a fine grain-growing country, and are encouraging their friends to come over and settle.—*M. L. Gordon, D.L.S., 1904.*

Township 32.—The best route for reaching this township, distant about 45 miles from Saskatoon, is by way of the Bones trail, generally in good condition, except in the spring. This township did not appear to be suitable for any kind of farming. A large alkaline lake covers about one-half of its acreage and the remaining part is comprised mostly of large muskegs and sand hills. The soil is generally a heavy alkaline gumbo, with the exception of the northeast section in the sand hills, where it is very light and sandy. The surface is flat near the lake, becoming undulating on approaching the sand hills. Some good bluffs of poplar timber were found in the sand hills,

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size 4 to 8 inches. Large quantities of hay can be cut in the many swamps and sloughs that surround the lake. The lake water is alkaline, drinkable in the spring months, but later on becomes too strongly alkaline and gives forth a very offensive odor, which can be smelt several miles from the lake. A large creek which drains the neighbouring townships enters the lake at its southern extremity and averaged one and a half chains wide, 6 feet deep and a current of one mile per hour. No outlet to the lake was observed. No water powers. Climate experienced was fine warm days and cool nights and no summer frosts. Fuel in the shape of dry poplar wood can be obtained from the several bluffs in the sand hills, but not in any great quantity. No stone quarries or minerals were located. The lake abounds in waterfowl and several antelope were seen. The survey of this township was commenced in May, but on account of the very wet character of the country, slow progress was made, and consequently it was not proceeded with until August, when it was considerably dryer.—*M. L. Gordon, D.L.S., 1904.*

Township 33.—This township is best reached from Saskatoon by the Bones trail, making the distance about forty miles. The trail is liable to be boggy in spring time, but is in good condition at all other times. The soil is, as a rule, a light loam and appears to be suitable for wheat cultivation. The land is gently undulating, with many scattered sloughs. No timber is to be found in this township; wood, however, can be procured, distant 5 to 10 miles on the east side of Goose lake. Hay in the form of slough grass may be cut in the various sloughs that abound in this township. The only water readily obtained is the slough water and the water from an alkaline lake. It appears, however, that good well water can be had at a depth of about 30 feet. There are no water powers; no minerals were seen or stone quarries. The climate appears to be good; such grain as was seen in the neighbourhood was doing well, although a little late. Game in the shape of prairie chickens, ducks and antelope were seen.—*M. L. Gordon, D.L.S., 1904.*

Township 34.—This township is best reached by a branch of the Bones trail from Saskatoon, about forty miles away. This trail is very good in dry weather, but soon spoils with rain and in the spring was quite impassable, unless it were for very light rigs. The surface of the township is gently rolling prairie with a few willows along the creek as its only break. The soil is a rich sandy loam and seems to be well suited to farming. There is no timber in the township, poplar poles and wood (the only fuel) being hauled 10 or 15 miles from adjacent townships. Eaglehill creek runs through the township. It has an average width of about fifty links, is two feet deep and has a current of about two miles per hour; the bottom is very soft and not safe for teams. The creek flows in a marshy flat about half a mile wide; this is worse than the creek and must be quite impassable in the spring. However, it makes beautiful hay meadows and so is a boon to the farmers. Sloughs are numerous. There are no water powers, no minerals of economic importance were seen nor any game beyond a few wild fowl. The climate seems good, several people having crops that appeared to be doing nicely. I am told that most, (in fact nearly all) of the $\frac{1}{4}$ sections open for entry are squatted on, but a great many of the squatters must have been absent at the time of survey.—*M. L. Gordon, D.L.S., 1904.*

Range 11.

Township 27.—This township can be reached by the old Bone trail from Saskatoon. It is undulating to rolling, open prairie with clay loam soil and clay subsoil. Classes 1 and 2. It is very good land for farming. There is no timber and the hay is very scattered. There is a permanent supply of good water in the township. There is fresh water in the marshy lake crossing sections 13 and 24, but it is very scarce in the west and there are no springs. There are no streams in the township and no

water power. There is no summer frost and none until very late in the fall. There is no fuel except along Red Deer lake. No coal or lignite veins were found in the township and no stone quarries or minerals. Wild ducks, prairie chickens and antelope are found.—*J. A. Côté, D.L.S., 1904.*

Township 28.—This township can be reached by the old Bones trail from Saskatoon. It is gently rolling to undulating, open prairie. The western end of Red Deer lake crosses sections 1, 12, 13, 24, 23, 26, 27, 34, 33, 28 and 29. In sections 12 and 13 the valley is generally 150 feet deep. The east part has a soil of clay loam about 6 inches deep, with clay subsoil. Class 1. In the west, the subsoil is sandy. Class 2 and 3. It is very good land for farming, except on both sides of Red Deer lake, where it is stony. There is no timber. The hay marshes are scattered. There is no permanent supply of good water in the township. There is no fresh water. In Red Deer lake the water is alkaline and unfit for drinking. There are no springs and no streams in this township. No summer frost was experienced and none until very late in the fall. There is no fuel except along Red Deer lake. No coal or lignite veins were found in the township. We saw no minerals or exposed rock. Wild ducks, prairie chickens and antelope are found.—*J. A. Côté, D.L.S., 1904.*

Township 29.—The best method of arriving at this township at present is by way of the Bones trail, from Saskatoon, distant about 80 miles. Hanley, however, is considerably closer and should a ferry service be instituted across the Saskatchewan, the latter place would be the more convenient starting point. The soil is a heavy clay loam and ought, with good tillage, to give good wheat crops. The surface of the country is undulating. Hay can be obtained in the numerous sloughs and in the creek valley. Fresh water was found in some sloughs, but the majority were alkaline. A small sluggish alkaline creek flows through a marshy valley in a northeasterly direction towards a lake, average 3 feet deep, 50 links wide, current 1 mile per hour. It is very boggy and extremely hard to cross with a horse and vehicle. The valley is under water in the spring. There is no water power. Climate: fair, warm days, with cold nights and no summer frosts were experienced. Fuel, in the shape of poplar and willow, is obtained in the sand hills in the northwest in township 31, range 11, but not in any quantity. No coal or lignite veins were seen. No stone quarries or minerals were located. Many ducks, geese and antelope were seen.—*M. L. Gordon, D.L.S., 1904.*

Township 30.—This township is best reached from Saskatoon, distant about 70 miles, by means of the Bones trail, which is generally in good condition, except in the spring months. The soil is a good quality of clay loam and appeared to be well adapted for raising wheat. The surface of the ground is gently undulating. No timber is to be found in this township. Hay can be cut in almost all the various sloughs. Fresh water can be obtained by digging wells down about 40 feet and from some of the sloughs. Surface water appears to be very plentiful in the spring and becomes scarce towards the end of the summer. There is no water power. Climate: nice warm days and cool nights and no summer frosts were experienced. The only fuel available is poplar and willow wood obtained in the sand hills to the northwest in township 31, range 11, west of third meridian, which with a large influx of settlers would soon be cleared out. No coal or lignite veins were noticed. No stone quarries or minerals were seen. Game can be had in abundance in the shape of ducks, geese, antelope, &c.—*M. L. Gordon, D.L.S., 1904.*

Township 31.—The best route for reaching this township from Saskatoon, distant about 60 miles, is by way of the Bones trail, generally in good condition, except in the spring. The soil is a medium clay loam, with the exception of the northwest portion in the sand hills where it is very sandy. The surface of the country is rolling, much broken by a deep coulée running through it in a northeasterly direction and by the sand hills in the northwest. Much good timber is found in the sand hills, being

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poplar up to 12 inches in diameter and willow (small). This timber, however, being the only supply for many miles around would soon be exhausted should there be a large influx of settlers. Hay can be cut in almost all the numerous sloughs that abound in this township. Almost all the surface water is slightly alkaline. Good water can be obtained by digging about 40 feet. A small dry creek runs in a north-easterly direction. There is no water power. Fine days and cool nights and no summer frosts were experienced. Fuel, in the shape of wood, can be procured from the sand hills. No coal or lignite veins were seen. No stone quarries or minerals were located. Much game, such as ducks, geese, antelope, &c., were seen.—*M. L. Gordon, D.L.S., 1904.*

Township 32.—The best route for reaching this township, distant about 55 miles from Saskatoon, is by way of the Bones trail, which is generally in good condition, except in wet weather. The soil is chiefly a rich loam with clay subsoil and appeared well adapted for raising wheat. The surface of the prairie is undulating, with sand hills in the southwest corner. A few scattered clumps of poplar are to be found in the sand hills, but the timber is of small size. Hay can be cut in most of the sloughs. Good water can be found in most of the sloughs in the spring months, it would appear, however, that this would be dried up in the summer months, and in order to insure a permanent supply wells would have to be dug. The water from a lake (alkaline) in this township is only good in the spring months. There is no water power. Fine warm days and cool nights and no summer frosts were experienced. The only fuel readily available is dry poplar, to be found on the sand hills about 5 miles to the southwest, but not in any great quantity, so that it would be speedily exhausted should there be any large influx of settlers. No stone quarries or minerals were located. Game in the shape of ducks and antelope were seen.—*M. L. Gordon, D.L.S., 1904.*

Township 33.—This township is best reached by trail from Saskatoon, made by the settlers, but not named. I was not over this trail, but it is said to be a good one. The surface of the township is rolling prairie, with a few patches of scrub and open bluffs of land along the creek. The wood in these bluffs is Manitoba maple and seems to be of little use for anything. Wood for fuel and poles has to be brought about 12 miles, either from the north or south. Eaglehill creek traverses the township in the north half of it. The creek flows through a marshy flat in a well defined valley about half a mile wide at the bottom. This creek is very dangerous to cross on account of the bottom, but it is not large. The water in it is not very good. The creek furnishes some good hay flats, as do some of the sloughs of which there are enough to furnish water. No minerals of value were seen, nor any game. There is no water power. There were a good many settlers in this township and it will probably soon be taken up.—*M. L. Gordon, D.L.S., 1904.*

Township 34.—The best route to reach this township, distant about 50 miles from Saskatoon, is by way of the Smithville trail and a new trail around the north end of Colines lake, the former trail is well graded and generally in good condition, the latter is not good in the spring. The soil is a fine loam with clay subsoil and appeared to be very suitable for raising wheat. The surface of the country is rolling prairie, with occasionally a few willows around the sloughs. No timber is to be found in the township. Hay can be cut in most of the sloughs. The greater number of the sloughs are fresh water, and good water can be obtained also by digging wells down about 40 feet. There is no water power. Fine warm days and cool nights and no summer frosts were experienced. The only fuel available is soft maple, about six miles south in township 33, range 11. Timber for building purposes cannot be obtained nearer than 'poplar bush,' about 15 miles northeast. No stone quarries or minerals were located. Antelope, prairie chickens, geese and ducks were seen.—*M. L. Gordon, D.L.S., 1904.*

Range 12.

Township 29.—This township is reached from Saskatoon, 75 miles distant by the Bones trail and that branch of it striking the west side of Goose lake. Hanley would be nearer, but at the time of survey there was no trail and no ferry across the Saskatchewan. The soil is generally a heavy clay loam and is not so good, apparently, as in some of the country north, though doubtless it would prove fair farming land were it worked. The country is mostly undulating prairie, but the surface is very rough or hummucky like old slough bottom. We broke four rigs driving about the township. There is no timber of any kind—poles and fuel are hauled about 10 miles—larger timber there is none, and the settlers have to freight out lumber from Saskatoon. Sloughs are numerous in this township, but at the time of survey (July) many of them were quite dry and others nearly so. There is a small sluggish creek of not very good water crossing the southeast corner of the township. The climate is good. There is no water power. No coal or economic mineral was seen, but there were many small stones and boulders, evidently carried by water some time in the past to their present position. A few duck were seen, and an occasional antelope, but usually in the distance.—*Geo. A. Grover, D.L.S., 1904.*

Township 30.—This township is best reached by the Bones trail from Saskatoon, taking that branch of the trail which goes west of Goose lake and again turning due west along the north boundary of township 30, range 11. This is a fairly good trail in fine weather, but rain quickly spoils it. The soil varies from light sandy loam in the north part of the township to a very heavy clay loam in the south, all of it would be well suited for farming, though the southern part might prove heavy to break. The surface is gently rolling prairie, very lumpy ground, largely old slough bottoms. Sloughs are evidently very numerous in the spring, but at the time of survey (July) only the larger ones contained water; some of these are probably never dry. There is no other water in the township. The fuel most used is wood, which has to be drawn some fifteen or twenty miles. There were no economic minerals noted in the township. Very little game was seen—a few antelope. This township is being rapidly settled and should a railroad be built near it soon, will probably prove a great wheat-growing country, but it would seem that the railroad is essential to its development, as the country is not suitable for cattle raising.—*Geo. A. Grover, D.L.S., 1904.*

Township 31.—This township is best reached by the Bones trail from Saskatoon, taking a westerly branch from township 34; the trail is very good except in wet weather, when it becomes almost impassable. The southern part of the township is gently rolling prairie, with a fine sandy loam. Soil: excellent land for the farmer. The northern and northeastern parts, however, are not so good, being mostly sand hill, with much poplar and scrub, especially in the northeast corner of the township. Eaglehill creek crosses the northwest corner of this township; it was an insignificant stream at the time of survey (July), but the bottom is bad—dangerous for horses. There is a very pretty lake on the north boundary of the township, section 35, which holds very good water, the best I have seen in the neighbourhood. No game was seen nor any minerals of economic importance. The poplar bluffs in the sand hills furnish fuel and some building material for all the adjacent country—the best is being rapidly culled out. This township will probably not be settled as soon as those adjacent on account of the sand hills, which are apparently only fit for grazing purposes. The survey stakes of the Grand Trunk Pacific cross the north end of the township—people are rushing into the country in anticipation.—*Geo. A. Grover, D.L.S., 1904.*

Township 32.—This township is reached by the Bones trail from Saskatoon, from which a well defined branch runs into the township. The surface of the township is rolling prairie, with sand hills and poplar bluffs in the southeast corner. The soil is a sandy loam and except in the sand hills spoken of, should make fine farms. There is a pretty little lake partly in section 2. Eaglehill creek runs through the west

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half of the township. At the time of survey (August) it was not large; 50 links wide and 3 feet deep, current $1\frac{1}{2}$ miles per hour; but the bottom was soft and dangerous and the water seemed to have been much higher in the spring. No minerals of economic importance were seen. A few wild fowl and one or two deer were all the game noticed. Fuel is got from the poplar bluffs in the southeast corner of the township. There were several squatters in this township and I should think it would soon fill up.—*Geo. A. Grover, D.L.S., 1904.*

Township 33.—This township is best reached by trail west from Saskatoon, passing through Smithville and crossing Eaglehill creek on a bridge in township 35, range 10. This is a good trail in dry weather, but is easily spoiled by rain. The surface of the township is a rolling prairie getting gradually rougher as it approaches the Bear hills, which is slightly on the northwest corner of the township. Eaglehill creek flows through the southeastern portion of the township in a wide valley. This creek is not large, but the bottom is very bad and the least wet weather makes the valley bottom one large marsh—in places it appears to be a permanent marsh. There is no timber in the township nor other fuel. No minerals were noted. A few wild fowl were seen. There are no water powers. This township will undoubtedly soon be settled and furnish fine farms for many, but there is so much land that looks more promising, in the adjacent township, that this has so far received little attention.—*Geo. A. Grover, D.L.S., 1904.*

Township 34.—This township is easily reached by trail running almost due west from Saskatoon, made by the settlers. The surface of the country is a rolling prairie growing gradually rougher to the Bear hills. These hills do not appear to differ from the adjacent prairie except as to the degree of roughness and it is hard to say exactly where the rolling prairie becomes hills and vice versa. The soil is a clay loam not so attractive to the settlers as a lighter soil, but I fancy that in a few years it would produce good crops. The western part of the township is almost too rough for farming. There is one large lake in the township—running diagonally across the west half of it. I did not care to test the water in this lake as it had a most unpleasant odor. There were some good springs flowing into the west end of this lake, but there was no apparent outlet. The other lake in this township (secs. 24 and 25) is more like a marsh, but it is permanent water and seemed to be quite deep. There is no timber in the township either for fuel or building. An old cart trail was noticed in the township, apparently leading to Prince Albert—it has not been much used recently, but is well broken. Plenty of wild fowl were seen. There were no minerals of importance and no water powers.—*Geo. A. Grover, D.L.S., 1904.*

Range 13.

Township 29.—This township, like the rest of those in the south half of my contract, is best reached by the Bones trail from Saskatoon, keeping west of Goose lake and branching west again along the north boundary of township 30, then striking south. The country is exactly similar to the adjacent townships in my contract, gently rolling prairie. The soil seems rather heavy, but is said to be exactly similar to that of the Red river valley in Manitoba, if so this should become a great wheat-growing country with the advent of a railroad. There is no timber of any kind in the township, and wood for fuel has to be drawn from 10 to 15 miles. The only water in the township is in the sloughs, most of which were dry at the time of survey (July); generally the water is fairly good. There is a large slough or lake on the north boundary of the township—it seems to be permanent, though much grown up with tall grass. There were no minerals of economic importance seen and very few small stones even.—*Geo. A. Grover, D.L.S., 1904.*

Township 30.—This township is reached from Saskatoon by the Bones trail and taking the western branch. The soil throughout the township is a heavy sandy loam said to be excellent for wheat raising and general farming. At present the railroad is too far away, but settlers are coming in, in the hope that one will soon be built. The surface is gently rolling prairie, dotted with many sloughs, most of which were dry at the time of survey (July) though some looked as though they never dried up. Fuel is got from the sand hills in township 31, range 12—poplar poles and not a very great supply of that. There were no economic minerals seen. A few antelope and some duck were all the game seen.—*Geo. A. Grover, D.L.S., 1904.*

Township 31.—This township is almost 60 miles southwest from Saskatoon and is reached by one of the branches of the Bones trail. This trail is well broken and much used, but in wet weather is not a good one for heavy loads. The surface of the township is a rolling prairie, broken in the southwest part by coulees running into that of Eaglehill creek. This creek traverses the township from the southwest to the northeast, flowing in a deep valley about a quarter of a mile wide. The soil is a nice sandy loam, well adapted for agriculture. There were no frosts during the time of survey. No minerals of economic value were seen nor was any game. Fuel: poplar and poles can be got from the bluffs in the township to the east. Sloughs would furnish all the water necessary for settlers away from the creek. Hay could be cut in the sloughs and along the creek. At the time of survey there were no settlers in the township, but there is no apparent reason why it would not support a good many.—*Geo. A. Grover, D.L.S., 1904.*

Township 32.—This township is reached by a branch of Bones trail from Saskatoon. This is a very good trail in dry weather, but easily spoiled by rain. The soil is a light sandy loam and would appear to be excellent for farm purposes. The surface of the township is a gently rolling prairie in most parts. It is broken by quite a large ravine about two miles from the parallel to the south boundary. This ravine holds a dry creek which appears to be quite large at high water. There is no timber of any account in the township. Fuel and poles can be got from the poplar bluffs in township 31, range 12. No hay flats were noticed, but light hay could be cut almost any place. Water is scarce. No minerals or game were seen.—*Geo. A. Grover, D.L.S., 1904.*

Township 33.—This township is best reached by trail, almost due west from Saskatoon, made by settlers in the adjacent township. This is a very good trail except in wet weather. There is an old cart trail crossing the township, which would appear to lead to Prince Albert. It is well marked and good travelling, but has not been much used of late. The surface of the township is a rather heavy rolling prairie, increasing in roughness towards the north, where it gradually merges into what are known as the Bear hills. The soil is a clay loam throughout and should be good for agriculture, though not so easily worked as the lighter soil in some of the adjoining townships. There are no streams or water powers in the township and no timber of any size. Sloughs and ponds are, however, numerous and some of them were well covered with wild fowl. There were no minerals of economic importance seen.—*Geo. A. Grover, D.L.S., 1904.*

Township 34.—This township was reached by a good trail from Saskatoon, almost due west. The surface of the township is very rough and even hilly through what are known as the Bear hills, which lie largely in the south and southeastern parts of this township, appear to be merely an accentuation of the rolling character of the country. The soil is a clay loam, but owing to the roughness of the country it is not suited for farming. It might, however, be used for pasture. There were numerous springs seen in this township, which furnished excellent water, though unpleasant in smell owing to its being heavily charged with sulphuretted hydrogen. Numerous sloughs are scattered through the township and several small lakes. There was no

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timber, water power or economic mineral seen and no game except wild fowl.—*Geo. A. Grover, D.L.S., 1904.*

Range 14.

Township 27.—This township can be reached by the old Bone trail from Saskatoon. This township is undulating, open prairie. In the west part the soil is clay loam and clay subsoil; class 1. The east portion is sandy loam and sandy subsoil; class 1 and 3. Sections 30, 31 and 32 are crossed by a marshy lake of fresh water. This is very good land for farming and affords good pasturage. There is hay in marshes which can be cut in the dry seasons. There is a permanent supply of good water in the township. There is fresh water in the marshy lake crossing sections 30, 31 and 32, but there are no springs. There are no streams in the township and no water power. No summer frost occurs and none until very late in the fall. Fuel can be had only on the sandy hills in range 11. No coal or lignite veins were noticed in this township and no stone quarries or minerals. Game consists of wild ducks, prairie chicken and antelope.—*J. A. Côté, D.L.S., 1904.*

Township 28.—This township can be reached by the old Bone trail from Saskatoon. The northern part is rolling prairie and the south portion is undulating. The soil is clay and sandy loam and clay with sandy subsoil, classes 1 and 2. A large marshy lake crosses sections 5, 8, 9, 10, 11, 14 and 13. The land is very good for farming. There is no timber. Hay can be cut in the marshy lake in dry seasons. There is a permanent supply of good water in the township. There is fresh water in the marshy lake. There are no streams in the township. There are no water powers. There are no summer frosts and no frost until late in the fall. The only fuel is in the Sandy hills, range 11. There are no coal or lignite veins in the township. There are no stone quarries or minerals. The game are wild duck, geese and prairie chicken and antelope.—*J. A. Côté, D.L.S., 1904.*

Township 29.—This township can be reached by the old Bone trail from Saskatoon. This township is rolling to undulating, open prairie. The soil is generally clay and sandy clay loam on a sandy clay subsoil, class 2. Water is very scarce except in the southwest and the north. There is a large marsh in sections 29 and 30 and in section 9. This township is very good for farming. There is no timber. There is hay in the marshes and it can be cut in the dry seasons. There is a permanent supply of good water in the township. There is fresh water in the marshes in sections 29 and 30 and in section 9. There are no springs. There are no streams in the township. There are no water powers. There are no summer frosts and no frost until very late in the fall. The only fuel is in the Sandy hills, range 11. There are no coal or lignite veins in this township. There are no stone quarries or minerals. The game are wild duck, prairie chicken and antelope.—*J. A. Côté, D.L.S., 1904.*

Township 30.—This township can be reached by the old Bone trail from Saskatoon. This township is rolling to undulating, open prairie. Soil is generally clay and sandy clay loam on a sandy clay subsoil, class 2. Water is hard to find in the eastern part, but in the west there is more, especially in a marsh crossing sections 7, 8, 17 and 18. Eagle creek crosses sections 31 and 33. In this creek the water is alkaline and unfit for drinking. There is fair farming land. There is no timber and the hay is very scarce in the east half. There is a little more in the west in the marsh mentioned, which can be cut in a dry season. There is a permanent supply of good fresh water to be had from this marsh, but there are no springs. There is no summer frost and none comes until late in the fall. There is no fuel except in the sandy hills in range 11. No coal or lignite veins were noted in this township, and no stone quarries or minerals. Wild ducks, prairie chickens and antelope are found.—*J. A. Côté, D.L.S., 1904.*

Township 31.—This township can be reached by the old Bone trail from Saskatoon. It is rolling, open country. Sections 6, 4, 10, 15, 14, 23 and 24 are crossed by Eagle creek, running into a deep valley. Those sections are heavily rolling; soil, sandy with stones along the banks of the creek, class 4. A small watercourse crosses sections 31, 32 and 33. In sections 7, 8, 17, 20, 29 and 28 lies a marshy lake of fresh water. The soil is sandy and sandy clay loam on sandy subsoil, class 1. This township is very good for farming. There is no timber. The hay is very scarce in this township. A permanent supply of good water could not be found. In Eagle creek the water is alkaline and unfit for drinking. There are no springs or streams in the township. There are no water powers. There is no frost until very late in the fall. The only fuel is in the Sandy hills, range 11. There are no coal or lignite veins, no minerals or stone quarries. The game are wild duck, prairie chicken and antelope.—*J. A. Côté, D.L.S., 1904.*

Township 32.—This township can be reached by the old Bone trail from Saskatoon. It is rolling to undulating open prairie. The northwest is heavy, rolling country. There begins the coteau du Missouri. Sections 4, 7, 8, 9, 10, 15, 20, 21, 22, 24, and 25 are springy and alkaline lands; all the other sections are of clay and sandy clay loam and class 1, 2 and 3. An old cart trail crosses sections 30, 29, 33 and 34. A few small creeks flow easterly through the north and south. There is some very good land for farming, but no timber. In this township the hay is very scarce and there is no permanent supply of good water. There are no springs or streams whatever and no water power. Frost occurs, but not until very late in the fall. Fuel can be found only in the Sandy hills in range 11. We saw no coal or lignite veins and no stone or minerals. Game consists of a few prairie chickens and antelope.—*J. A. Côté, D.L.S., 1904.*

Township 33.—This township can be reached by the old Bone trail from Saskatoon, and lies on the Bear hills. It is all open prairie. The western part is heavy, rolling and hilly, much broken by lakes, sloughs and marshes. The soil is sandy, of classes 3 and 4. The eastern part is rolling with a light sandy soil, class 4. There are few quarters suitable for mixed farming, and the greater part is only fit for grazing. There is no timber. Scattered about there is a great number of small sloughs and marshes, where hay could be cut in dry seasons. The numerous small sloughs and marshes furnish a permanent supply of fresh water. In the lakes the water is alkaline. There are no streams, springs or water powers in the township. There is no frost in summer and only late in the fall. There is no fuel except in the Sandy hills in range 11. There are no coal or lignite veins, no stone quarries or minerals. The game are, wild duck, geese and prairie chicken, also a few antelope.—*J. A. Côté, D.L.S., 1904.*

Township 34.—This township can be reached by the old Bone trail from Saskatoon, and it lies on the Bear hills. It is very heavily rolling and broken by lakes, sloughs and marshes. Soil, sandy loam and sandy subsoil. Classes 3 and 4. There are few quarters good for mixed farming, but the greater part is fit only for grazing. There are a number of small hay sloughs and marshes, where hay can be cut in dry seasons. In the sloughs and marshes the water is fresh, but in the lakes it is alkaline. There are no springs or streams and no water power. Climate: frost only late in the fall. There is no fuel except in the Sandy hills in range 11. No coal or lignite veins and no stone quarries or minerals were found. Game: wild ducks, geese and prairie chickens and a few antelope.—*J. A. Côté, D.L.S., 1904.*

Range 15.

Township 27.—This township can be reached by the old Bone trail from Saskatoon. It is undulating, open prairie. Soil is clay loam with clay subsoil. Class 1. A

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creek or chain of small pools flows northerly through sections 30 and 31 to a marshy lake in the centre of township 28, range 15. This township is very good for farming. There is no timber. Abundance of hay can be cut in the dry seasons in the marshy lake which crosses sections 24, 25 and 36. There is a permanent supply of good water in the township and fresh water in the marshy lake, which crosses sections 24, 25 and 36, but there are no springs. There are no streams in the township and no water power. No summer frost occurs and none until very late in the fall. No fuel is found except in the Sandy hills in range 11. No coal or lignite veins were observed in this township. No stone quarries or minerals were noticed. Game consists of wild ducks, prairie chicken and antelope.—*J. A. Côté, D.L.S., 1904.*

Township 28.—This township can be reached by the old Bone trail from Saskatoon. The northern part is hilly prairie, a large marshy lake lies on sections 25 and 26. The east and south are undulating and rolling prairie. There is a lake crossing sections 4, 9, 10, 14, 15, 16, 17, 21, 22 and 23, and another crosses sections 18, 19, 20 and 29, and another one crosses sections 19 and 30. The soil is clay loam with clay subsoil, classes 1 and 2. The land is very good for farming. There is no timber. There is hay along the lake and it can be cut in dry seasons. There is a permanent supply of good water in the township. There is fresh water in the numerous small marshes. The lakes are alkaline. There are no streams in the township. There are no water powers. There are no summer frosts and no frost until late in the fall. The only fuel is on the Sandy hills, range 11. There are no coal or lignite veins. There are no stone quarries or minerals. The game are wild duck and geese, prairie chicken and a few antelope.—*J. A. Côté, D.L.S., 1904.*

Township 29.—This township can be reached by the old Bone trail from Saskatoon. The west part is heavily rolling and hilly and lies in what is called the Bad hills. The soil is sandy clay loam, with sandy clay subsoil and very stony; class 2 and 3. The eastern portion is rolling, open prairie soil clay and sandy loam, with sandy clay subsoil. Class 1 and 2. In the valley which crosses sections 26, 27, 22, 15, 10 and 9, there is excellent pasturage. There is some very good land for farming and except on the Bad hills it is very good for mixed farming. There is no timber and hay meadows are very scattered in the township. There is no permanent supply of good water in the township. The fresh water is very scattered. There are no springs and no streams in this township. There are no summer frosts and none until very late in the fall. There is no fuel except in the Sandy hills in range 11. No coal or lignite veins were found in the township. There is no stone suitable for quarrying and no minerals. A few prairie chickens and antelope are to be found.—*J. A. Côté, D.L.S., 1904.*

Township 30.—This township can be reached by the old Bone trail from Saskatoon. It is rolling open prairie, with sandy loam soil and clay subsoil. Class 1 and 2. Eagle creek runs through sections 29, 30, 33, 34, 35 and 36 into a valley about 60 feet deep. This valley is a quarter of a mile in width with clay loam soil and clay subsoil with stones, class 3 and 4. A few small marshes are scattered about. A small water course crosses sections 7, 9, 17 and 18 at the bottom of a deep ravine. There is very good land for farming in this township, but no timber. There is a little hay scattered through the township. There is no permanent supply of good water; the water in Eagle creek being alkaline and unfit for drinking, and there are no springs. There is no summer frost and none until very late in the fall. There is no fuel except in the Sandy hills in range 11. No coal or lignite veins were found in the township and no stone quarries or minerals. Wild ducks and prairie chickens and a few antelope were found.—*J. A. Côté, 1904.*

Township 31.—This township can be reached by the old Bone trail from Saskatoon. The eastern part is open, rolling prairie with very few marshes; classes 1 and 2. Sections 1, 2, 3, 4, 5 are heavy rolling and stony prairie; they are situated on

the northern bank of the Eagle creek valley. Class 3. The southwest is gently rolling, open prairie, with a heavy clay soil and the northwest open rolling prairie with clay loam and clay subsoil. Class 1. The land is very good for farming purposes and produces fair pasturage. The coteau du Missouri borders the southern limit of section 19. A small creek running easterly crosses sections 31 and 36. No timber is to be found. Hay may be cut only in a few small hay marshes. In this township there is no permanent water, neither springs nor streams. No summer frost was noted. Frost occurs very late in the fall. There is no fuel except in the Sandy hills in range 11. No coal or lignite veins were found in this township and there are no stone quarries and no minerals. Prairie chickens and a few antelope are to be found.—*J. A. Côté, D.L.S., 1904.*

Township 32.—This township can be reached from Saskatoon by the old Bones trail. The northwest part is heavily rolling, the south and east quite rolling. Along the north boundary, one can find excellent pasturage, and fair farming land. The whole township is advantageous for farming purposes. Soil is a clay loam and clay subsoil. Classes 1, 2 and 3. Sections 11, 12, 13 and 14 are alkaline land. Rising more sharply on the north from sections 23 and 24 a considerable elevation is reached above the plain to the south and the east. There is no timber and very little hay. Although a rather small lake occurs in sections 22, 27 and 26, the water is scarce, for there are no springs or streams and no water power. There was no frost until very late in the fall. Fuel is to be found only in the Sandy hills, range 11. In this township we found no coal or lignite veins, no minerals and no rock in place. A few prairie chickens and antelope are the only game to be found.—*J. A. Côté, D.L.S., 1904.*

Township 33.—This township can be reached by the old Bone trail from Saskatoon, and it lies on the Bear hills. The east is heavy rolling to hilly country with many marshes scattered about; and is very stony in places. The west is heavily rolling to hilly and broken with open prairie; a good many ponds and marshes and very stony places are to be found in this part. The soil is sandy loam with sandy subsoil. Classes 2, 3 and 4. A small creek, course easterly, from a lake in section 9, crosses sections 3 and 2. The south part is hilly with a good soil and excellent pasturage. There is no timber. There are a great number of small hay marshes, where hay can be cut in a dry season. There is a permanent supply of good water in the township. The water in the numerous small sloughs and marshes is fresh, but it is alkaline in the lakes. There are no springs. The climate is fair, and frosts occur only very late in the fall. Fuel can be found only in the Sandy hills, range 11. There are no coal or lignite veins, no minerals and no stone quarries. Wild ducks and geese, prairie chickens and a few antelope are found. —*J. A. Côté, D.L.S., 1904.*

Township 34.—This township can be reached by the old Bone trail from Saskatoon. This township lies on what is called the Bear hills. The west part is open rolling prairie. The east is broken by ponds and marshes, and is a heavily rolling country in the south and rolling to the north. The soil of sandy loam is of classes 2 and 3 in the south and 4 in the north. There are few quarters good for mixed farming, but the greater part is fit for grazing. Scattered about there are a great number of hay sloughs and marshes, where hay can be cut in a dry season. There is a permanent supply of fresh water, in the numerous small sloughs and marshes; but no springs or streams whatever can be found and there is no water power. Climate: frost, none in summer, but late in the fall. No fuel except in the Sandy hills in range 11. No coal or lignite veins were observed and no stone quarries or minerals. Game: Wild ducks, geese and prairie chickens, a few antelope.—*J. A. Côté, D.L.S., 1904.*

Township 45.—This township lies about two miles east of the Battleford and Round hill trail. This trail is in good condition and the travelling after leaving it is easy. The soil is clay and black loam and is suitable for wheat and mixed farming.

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The surface is rolling prairie, with scattered bluffs of small poplar and willow, probably about two-thirds prairie. There is no timber, but scrubby poplar scattered throughout the township. There is a small quantity of hay in the northern and western parts of the township. There is very little water in the township. What there is in sloughs and ponds is fresh, but hard, and that in the small lake on the north boundary is slightly alkaline. There are no water powers. The climate is similar to that in other parts of Saskatchewan, there are occasional summer frosts. Small poplar is the only fuel; it is found in bluffs scattered all over the township. There are no stone quarries or minerals. Prairie chickens and ducks were the only game seen.—*T. S. Gore, D.L.S., 1904.*

Range 16.

Township 27.—The soil in this township is very hard and dry, being chiefly hard clay. From the nature of the soil it is not well adapted for agriculture or grazing. The southeasterly portion would perhaps be good for crops if once broken up, yet the soil is very hard. The westerly portion is very hilly and undulating and in parts stony. The whole surface is open prairie without any timber or scrub of any kind on any part of it. Water is very scarce and is found only in a very few ponds, many of which are alkaline. There are no running streams on any part of the township. The general climate appears to be favourable and there would not be liability to summer frosts. Fuel is entirely wanting, as there is no timber of any kind. There were no coal seams or lignite observed on any part of the township, nor are there any stone quarries or minerals of any kind. Game is scarce, only an occasional antelope to be seen. The general rating of the township would at least be second class, on account of the hardness and dryness of the soil, and scarcity of fuel and water. There is a small spring on section 33, also on section 21, but the supply is very limited, as the water is soon dried up after it is away a few chains from the spring.—*James Warren, D.L.S., 1904.*

Township 28.—The soil in the township is very hard and dry, and on account of that is not well adapted for agriculture; and as there is not much grass the township is not favourable for ranching purposes. The surface is open prairie and is very hilly and undulating and in some parts the surface is stony, and no timber of any kind is to be found on the township. There are no hay lands or marshes, the only grass is about the ponds or sloughs. Water is not plentiful, but there are a few ponds that would yield a permanent supply, which in most cases is good, there being little alkali. There are no streams, consequently there are no water powers. There is no fuel of any kind to be found, as there is no timber nor are there any seams of coal or lignite. There are no stone quarries, but in many places there are a great many loose stones on the surface. Minerals of all kinds are unknown. Game is also scarce—only a few ducks on the ponds, and an occasional antelope. Taking this township as a whole, it would be a second or third-class township on account of the hardness of the soil, and scarcity of grass for cattle or grazing purposes.—*James Warren, D.L.S., 1904.*

Township 29.—The southerly portion of this township is very hilly and broken, having numerous ponds or sloughs. The northerly portion is not so uneven, being comparatively level, except part of the northwesterly portion. The soil in the township is generally hard clay and difficult to dig. The subsoil is also very hard, being composed of whitish clay. The surface is all prairie; no timber or scrub of any kind being on the township. There are no hay marshes of any kind and the grass in most places is very short. There are several ponds of water, most of them being good, but some which contain a good deal of alkali. There are no streams of any kind, nor are there any water powers. The climate is favourable and

I would not consider the land to be liable to summer frosts, judging from the surroundings. There is no fuel of any kind, the nearest wood we got was at the northwesterly angle of township 30, range 17, where there is a little in a very deep coulée, which is small in size. There are no stone quarries or exposed rock in any part of the township, nor are there any minerals to be found. Game is scarce—only a few antelope were seen occasionally. Taking the township as a whole it should be rated as second class, owing to the hardness of the soil and lack of grass or pasturage. It is difficult to say for what the township is best adapted; there are portions that might be available for cultivation once it was broken up, yet the soil is hard.—*James Warren, D.L.S., 1904.*

Township 30.—The surface of the township is very varied, from a hard clay prairie to a soft loam along the banks of Eaglehill creek. There are some sections that could be rated as first class, but the greater part is second class. Some of the land would be well adapted for growing grain, but the greater part is too hard for practical use. The surface is entirely prairie and has no timber or scrub of any kind on any part of the township. There are no hay lands or meadows, the grass being generally very short. Eaglehill creek runs through the southerly part of the township. Its course is very tortuous and the current slow, from one to one and a half miles an hour. The channel is deep and steep on the sides, which, with the soft bottom makes the crossing very bad and dangerous. The water is impregnated a good deal with alkali. In the springtime it floods a great deal of the flats on its banks. The current being so slow it is not possible to develop any water power. The climatic indications are favourable. There is no fuel on any part of the township. The only wood near is in the northwesterly part of township 30, range 17, where there is a very limited supply. There are no coal or lignite seams to be found in any part of the township nor are there any stone quarries, and surface stones are scarce. There is no game, only an occasional antelope and a few ducks on the creek and ponds. The township as a whole would be rated second class.—*James Warren, D.L.S., 1904.*

Township 31.—The soil in this township is generally very hard and dry, being chiefly hard clay and therefore would not be well adapted for agriculture or crop raising and on account of the hardness of the soil the grass is very short in most places; it would not be good for grazing. The surface is open prairie; there is no timber or scrub on any part of the township. The surface is in many places quite undulating and hilly. There is no hay land or grass that would be fit for cutting to be found on the township. There are some ponds in which the water is generally good, there being little alkali. There is one very large pond or lake in the township, which was traversed under the name of Green lake. The water in places is about 3 or 4 feet deep in the easterly part of the lake, but in the westerly part it is not so deep and is covered with grass. There are no streams and consequently no water powers of any kind. The climate of itself seems to be favourable and we saw no indications of any coal or lignite and no timber; the nearest of any quantity being on township 35, range 16. There are no quarries or fixed rock on any part of the township nor are there any indications of minerals. Game is scarce, only a few ducks on the ponds and lake. The Battleford and Swift Current trail runs through the northwesterly angle of the township; there are also some traces of old trails on other parts.—*James Warren, D.L.S., 1904.*

Township 32.—This township taken as a whole is very undulating, with very little level prairie. The greater part of the soil is very hard, only a few sections would be good for agriculture. The surface is entirely prairie, there being no timber or scrub to be found on any part of the township. There are no hay marshes or meadows, but in places the grass is fairly good for grazing during the early part of the season. There are many ponds which contain good water and the supply would be permanent, as many of the ponds are quite deep. There are no streams and no favourable mill sites.

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The general indications of the climate are favourable and there would not be much chance of summer frosts. There is no fuel of any kind in the township. The nearest point where fuel could be had is in township 35, range 16, known as 'the 60 mile bush.' There is no fixed stone any where in the township, but in places there are loose stone on the surface. There are no minerals of any kind. The game is scarce, there being only a few antelopes and some ducks on the ponds. The Swift Current and Battleford trail goes through the township and is a very great convenience in travelling, as the trail is a first class one.—*James Warren, D.L.S., 1904.*

Township 33.—The soil in this township is clay, and in many places very hard. So on the whole it would not be suitable for agriculture, and the grass is generally short, except around the ponds, where the grass is longer. On the whole the township would be rated as second class, there being no first class land. The surface is undulating and in many places very hilly, and is all open prairie; there being no timber or scrub on any part of it. There are no hay lands or any grass that could be cut for hay. The water in the ponds is generally fresh, there being little trace of any alkali. There are no streams of any kind, so that the water supply would depend entirely on the ponds, some of which would appear to be permanent. Fuel is entirely wanting, as there is no timber, and no seams of coal or lignite were to be seen on any part of the township and there are no minerals of any kind. Game is also scarce, as we did not see any antelope or ducks. The Battleford and Swift Current trail runs through the township.—*James Warren, D.L.S., 1904.*

Township 34.—The soil in parts of this township is loamy or sandy and in other parts the soil is very hard; but many parts would be adapted for agriculture. The greater part of the township is prairie, but in the northerly part there is a little bush; but the trees are small and none of them would be of any commercial value, but some could be used for small buildings, also for fuel, but the timber is very small. There is a good deal of scrub and willow in places. There is a nice hay meadow in section 30. This is the only hay land in the township, and this is limited. There are many ponds, some of which are quite alkaline and others are good fresh water. There are no streams on any part of the township, and consequently no water powers. The climate seems favourable, but from the surroundings might be liable to summer frosts. The only fuel in the township is the small timber already referred to. There are no indications of coal or lignite, nor are there any indications of stone anywhere, or any signs of any minerals. Game is scarce, only a few duck were seen on some of the ponds. The northern part of the township is, in places, quite sandy, especially where it is scrubby, and yields no grass. Part of the township could be used for ranching purposes as there would be some shelter for cattle.—*James Warren, D.L.S., 1904.*

Range 17.

Township 27.—The soil in this township is very hard and in places stony, and on account of its hardness is unfit for agriculture and there being no grass of any account, is not suitable for grazing purposes. The surface is very hilly, which on account of the hard soil, makes the rating of the township very low, as a great deal of the soil is rated third class. There is no timber of any kind on any part of the township, as the surface is all open prairie. Neither is there any hay land on any part, and the grass generally is very short. Water is scarce, only a few ponds in which water can be got, which are generally fresh, but some are quite alkaline. There are no streams, and consequently there are no water powers. Fuel is scarce, in fact none at all to be got on the township. The nearest wood (and that of a very limited supply) is at the northwest angle of township 30, range 17, where there is a very little in a deep coulee. There is no coal or lignite to

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be seen. Neither are there any stone quarries or fixed rock of any kind, or any indications of minerals. An occasional antelope is the only game to be seen. Swift Current and Battleford trail runs through the township, which is a very great convenience, as the trail is very good.—*James Warren, D.L.S., 1904.*

Township 28.—The soil in this township is very hard and dry, being nearly all hard clay, and in some places stony. The soil is so hard that it is quite unfit for agriculture, and the grass being short would not be good pasturage, and would be rated as a second or even a third class township. The surface is very much broken with hills, there being no level land on any part of the township, and there is no timber or scrub. The nearest timber of any quantity is on township 35, range 16. There is a very limited supply in the northwest corner of township 30, range 17. There are no hay marshes to be found. There is no water, only what is to be found in some ponds, and they are few, but the water is generally good. There are no streams and consequently no water powers, nor are there any stone quarries or minerals to be found. Game is scarce—a few antelope being seen occasionally. Swift Current and Battleford trail runs through the township, which was a very great convenience to us. The trail is good. In many places the pits were badly obliterated and difficult to find.—*James Warren, D.L.S., 1904.*

Township 29.—I began operations on May 23 and completed the subdivision on the 31st of same month. I found the soil in the township very hard and difficult to dig, as the surface was very hilly and in places stony. There were a great many ponds, some of which were very deep and large. The water was fairly good in most cases. There were some ponds that were alkaline, but not to any extent. The soil is very hard, chiefly clay and is not adapted to agriculture, but in some parts the grass is fairly good. The surface is all prairie and there is no timber of any kind growing on the township. There are no hay marshes or any grass meadows. The water is generally good in the ponds, some of which, no doubt, would contain water all summer. No streams of any size only one small stream in the northerly part of the township. There are no water powers. The climate is such that there would be no summer frosts of any account. There is no fuel in any part of the township. The nearest point at which we got any wood—and that of a very scrubby nature—was at the northwest angle of township 30, range 17, in which there is a very deep coulée in which there is a little wood. There are no stone quarries nor any fixed rock, but in places some loose stones are to be found. Neither are there any minerals of any economic value. There is very little game, only a few antelope to be seen. It is difficult to say what the township is best adapted for on account of the hardness of the soil, the hilly nature of the surface and the absence of hay meadows. Taking the township as a whole I would rate it second class, owing to the hardness of the soil. Battleford and Swift Current trail runs through this township and is a very great convenience for travel.—*James Warren, D.L.S., 1904.*

Township 30.—The eastern and northern portions of this township are comparatively level, no very steep or abrupt hills. The northwesterly part is broken with hills and coulées, also by Eaglehill creek running through part of the northeasterly portion. The soil is generally clay, which is mostly very hard and dry. It is difficult to say what it is best adapted for, as the soil with its whitish clay subsoil is so hard and dry. Along Eaglehill creek, the flats are alkaline and soft. There is no timber on any part of the township, only in a deep coulée in the northwesterly corner, where there is a little wood, but very small and scrubby and very limited in supply. Eaglehill creek runs through the northeasterly part. It is a deep and very sluggish stream, current not more than one mile an hour. The water has a good deal of alkali in it. The stream is from twenty to fifty links wide and from eighteen inches to four feet deep. This stream would flood a great deal of land in the spring time or in high water. There are no water powers on the creek, as it runs very slowly. The climate

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would be fair and would not be liable to summer frosts, judging by the surroundings. There is no coal or lignite exposed in any part of the township. There is no fixed stone or rock nor are there any minerals of any kind to be seen, nor liable to exist there. There is no game except an occasional antelope. There are portions of the township that might be available for cultivation if once broken up, yet at present it is not a township that would be available for agriculture, and there are no hay marshes or meadows that would supply hay for ranching purposes.—*James Warren, D.L.S., 1904.*

Township 31.—The north and northeasterly portions of this township contain some fairly good land, but the south and southwesterly parts are rough and broken by deep coulées and the valley of Eaglehill creek. The soil along the flats of the creek contains a good deal of alkali, but the northern portions are comparatively free from it. These would be well adapted for agriculture, but the grass is very short in most parts of the township. The surface is entirely prairie, some of which is partly level, but other parts are badly broken up by coulées. There is no timber of any kind only a few scrubby trees in a coulée near the southwesterly corner of the township. There are some ponds of fairly good water, but the water in Eaglehill creek, which runs through the southwesterly quarter, flows with such a slow current that it could not be utilized in any way for water power. In spring it floods for quite a distance from its banks, which are very steep. The stream itself is twenty links to, in some places, over one chain in width and in many places deep, but the depth when the stream is running is not more than eighteen inches to two feet, and has a muddy bottom. The climate is fairly good and free from frosts. There is no fuel of any kind, there being no veins of coal or lignite appearing anywhere, nor any fixed stone to be seen. A few duck may be seen on the ponds, but game of all kind is very scarce. Battleford and Swift Current trail runs through the township, which is a great convenience for getting into the township, and the crossing at Eaglehill creek is not a bad one and could be easily made a good one. The pits along the trail are very hard to find, and scarcely any posts are to be seen anywhere.—*James Warren, D.L.S., 1904.*

Township 32.—The soil in this township is generally very hard and dry. The southerly and southeasterly portions are more level. The whole of the surface is prairie, there being no timber or scrub on any part of it. There is no hay land or tall grass of any kind. The grass is generally very short and thin. There is a small spring creek running through the northwesterly part of the township, which is fairly good water, having only a slight trace of alkali. The creek is supplied from a spring in the northerly part of the township, and the supply all through is permanent. The stream being small, only from two to three feet wide, and only six inches deep, is not of a sufficient capacity for any water power to be developed from it, and as the current is slow it could not be utilized. The climate appears to be favourable and would not be liable to summer frosts. There is no fuel of any kind on any part of the township. The nearest supply of any kind is in township 35, range 16, where there is some timber. There are no indications of coal or lignite to be seen, nor any stone quarries or minerals of any kind as the prairie is all quite bare. There is no game of any kind, except a few antelope. The general surface is favourable, but the soil being so very hard and dry it would be rather unfavourable for agriculture, yet if it was broken up it might yield good grain crops. There are scarcely any ponds on the township, so the water supply is rather scarce, only the small spring creek already referred to. We found a trace of a railway survey on the north boundary of section 22, but not elsewhere.—*James Warren, D.L.S., 1904.*

Township 33.—The soil in this township is generally very hard and in many places stony and on account of its being so hard it is not well adapted for agriculture; and the grass is very short in most places and would not be suitable for grazing or ranching. The surface is open prairie, undulating and in many places very rough

and hilly. There is no timber or scrub on any part of the township, nor are there any hay meadows or marshes. There are a good many ponds in parts of the township in which the water is generally good, but the supply is not large. There are no streams of any kind, and consequently no water powers. The climatic indications are favourable. There is no fuel on the township, the nearest is on township 35, range 16. Neither are there any seams of coal or lignite to be seen or stone quarries, but there are a good many stones on parts of the township that could be used for building purposes. No minerals of any kind were seen. Game is scarce—only a few antelope and duck were seen occasionally. Taking the township as a whole it would be rated second class at least, as the soil is not adapted for agriculture or grazing.—*James Warren, D.L.S., 1904.*

Township 34.—This township taken as a whole is very broken and rough, there being a great many hills, sloughs and ponds and not much soil that would be fit for cultivation. The surface is entirely prairie and of a very undulating nature. No timber or scrub of any kind is to be found on any part of the township. There are no hay marshes or meadows to be found. There are many ponds of water, some of which are good, but many are alkaline. The supply in many cases will be permanent as the ponds are deep. There are no streams of any kind to be seen, and as there are no streams there are no water powers of any kind. The climate will be favourable and not subject to summer frosts, judging from the surroundings. There is no fuel on any part of the township nor any coal and lignite. The nearest supply of fuel is on township 35, range 16, which is known as the 'sixty mile bush,' in which there is a fair supply of wood. There is no fixed rock in any part of the township, but in many places stones are to be found on the surface. There are no minerals of any kind. Game is scarce—a few antelope were seen and on the ponds there are a few ducks. This township as a whole would have to be rated as low as second class. There are places where cattle and horses would feed well during the summer months, but there is no shelter of any kind for the winter, and there is very little soil that is available for agriculture.—*James Warren, D.L.S., 1904.*

Township 51.—Turtle lake trail northward from Jackfish lake runs within a few miles of this township and is a fairly good road in dry weather. The soil is principally clay and black loam and is suitable for mixed farming. The surface is generally covered with poplar and willow scrub, though there are some stretches of open prairie in the eastern half of the township. The timber is poplar up to about 10 inches in diameter and is scattered in clumps through the scrub all over the township. It is only suitable for fuel. There is a fair amount of good hay scattered about in sloughs and adjoining Maiden lake. The water in ponds and sloughs is fresh and apparently permanent. Maiden lake on the north boundary of the township is a shallow marshy lake with fresh water; the outlet of it is through marshy land northward into the south branch of Turtle lake river. There are no water powers. There have been some slight summer frosts this year. The only fuel is poplar scattered about the township. There are no stone quarries and no minerals. Very little game was seen, only a few ducks.—*T. S. Gore, D.L.S., 1904.*

Township 52.—This township may be reached by the Stony lake trail, which branches off the Turtle lake trail at Louis Nault's ranch in township 51, range 18. The trail is but little travelled, but is passable in dry weather. The soil is generally a dark loam, gravel and clay, and is suitable for mixed farming. The surface is mostly covered with scrub and timber, but through the middle and south parts there are large flats and swamps that are partly open. There is spruce and poplar up to 15 inches in diameter in patches, principally in the northern part of the township. It is suitable for building, but very little would do for lumbering. There is a quantity of rather inferior quality of hay all through the south half of the township. The large swamp in sections 15, 16 and 10, which, this year, is too deep to wade, in drier seasons

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would afford a large amount of good hay. The water is fresh, but dark. The east boundary runs along the marsh on west side of Midnight lake, and this lake, which is shallow and marshy, empties through the south branch of Turtle river into another lake on the west side of the township. The river where it is not spread out in the marsh is about $1\frac{1}{2}$ chains wide and from three to four feet deep and runs two or three miles per hour. There are no water powers. Poplar is the only fuel, it is found all over the township. There is rather more summer frost than in the open country. There are no minerals and no rock exposures. Duck and deer are the only game.—*T. S. Gore, D.L.S., 1904.*

Range 18.

Township 30.—The route for reaching this township is along the surveyed trail from Swift Current towards Battleford, and thence westerly to this township. The trail is in good condition. The soil is generally about six to eight inches of black loam on a clay subsoil in the easterly half of the township, and a sandy subsoil in the westerly half. The greater part of the township is hilly, and best adapted for grazing, but sections 1, 2, 11, 12, 13, 14, 23, 24, 28 and 29 are not so hilly and fairly suitable for farming. The whole of this township is open prairie, except in section 36, where there is a deep coulée containing some scrub. In this coulée there is a small quantity of maple and poplar from two to six inches diameter. There are small hay marshes scattered throughout the township, but none of large size. The quality of hay cut from these marshes would be good. Fresh water marshes and ponds are numerous throughout this township, and Shrimp lake in sections 22 and 27 is also fresh, but full of organic matter. The water supply is sufficient, and in the lake and deep ponds is permanent. The land is not liable to be flooded. There are no water powers. The general indications point to a climate with comparatively little rainfall in the summer months. There were no summer frosts. There is a small quantity of wood in the coulée in section 36 suitable for fuel, but it would soon be exhausted. No coal or lignite veins were found. There were no stone quarries or minerals of any kind found in the township. A few antelope were seen, also waterfowl on Shrimp lake and the different ponds and marshes. An old cart trail enters the township in section 24, and runs in a southwesterly direction, leaving the township near the southeast angle of section 6. *Herbert J. Bowman, D.L.S., 1904.*

Township 51.—This township can be reached by the Turtle lake trail from Jackfish, which touches the southwest part of it. The trail is fairly good. The soil is principally clay and in many places gravelly and stony. It would be only suitable for mixed farming. The surface is irregular and rolling and is about one-third prairie, and the rest scrubby poplar bluffs and willows. The timber is poplar up to 10 inches in diameter, more or less scattered all over the township, but principally on the west half. There is considerable hay scattered throughout the northern half of the township, in small areas—it is of good quality. The water in sloughs and ponds is fresh, but there are not very many of them, and water would probably be scarce in dry seasons. There are no water powers. There have been a few slight summer frosts this year. The only fuel is poplar, which is scattered throughout the township. There are no minerals and no exposed rock. The only game seen was a few ducks and prairie chicken.—*T. S. Gore, D.L.S., 1904.*

Township 52.—This township may be reached via Turtle lake trail from Jackfish lake. The trail is poor and very little used. The soil is generally a dark loam inclined to be stony on the higher ground; it would be suitable for general farming. This township is undulating, with many swamps and almost entirely covered with willow and poplar scrub and timber. The timber is white and black poplar up to 12 inches in diameter and also a little spruce of about the same size scattered about. The greater part of the timber is on the north half of the township. There is a heavy

growth of long grass, but not much available for hay on account of the brush growing through it. The water is fresh and permanent and is very high this year, a good deal of the low land being flooded. A lake extends nearly half way across the township from the east boundary. It is shallow, with flat shores. It empties into the south branch of Turtle lake river which flows westward across the township and this year is a stream from 4 to 10 feet deep and a chain and a half wide running about 3 or 4 miles an hour. Land adjacent to the lake is liable to be flooded 2 or 3 feet deep in places. There are no water powers. This part of the country is more subject to summer frosts than the more open country south. Climate, otherwise similar. The only fuel is poplar, scattered all over the township. There are no minerals and no stone suitable for quarrying. Ducks and deer are the only game.—*T. S. Gore, D.L.S., 1904.*

Range 19.

Township 43.—(Part of township).—The land in parts is fairly well adapted to cultivation, being open and undulating prairie, classed 2 and 3. Soil is sandy loam with clay subsoil, being especially well suited for grazing. Good water is found in the sloughs, which are scattered throughout the township. No timber is found on this portion of the township nor were any minerals visible. Sounding lake trail passes in the southeast corner of section 1, leading to Battleford, which is about 13 miles distant.—*G. C. Rainboth, D.L.S., 1904.*

Township 52.—This township may be reached by the Turtle lake trail from Battleford via Jackfish lake. The trail, except for the last 10 miles is fairly good. The soil is generally dark loam and clay and is suitable for general farming. The surface is nearly all covered with scrub and timber and is slightly rolling. The timber is principally poplar up to 14 inches in diameter, and scattered clumps of spruce about the same size. There is considerable fallen timber in the northern part of the township and travelling is very difficult. In dry seasons there would be considerable hay in sloughs and flats this year flooded, and so not available. The water in sloughs, lakes and creeks is good and fresh. The south end of Turtle lake occupies about 2 sections in the northeast corner of the township and empties into Turtle lake river, which flows through the township and out near the southwest corner. It is joined by the south branch in section 9. This summer they are both about from 1 chain to one and a half chains wide and from 3 to 6 feet deep, flowing about 3 miles per hour. Both streams caused me considerable loss of time on the survey of the township, as in most places they could not be crossed without a boat. There is no water power. Poplar is the only fuel and it is everywhere in the township. There are no stone quarries and no minerals. The weather has been very fine all summer, with sufficient rain, but there has been more or less frost each month. Ducks, deer and bear were the only game seen. Fish are plentiful in Turtle lake.—*T. S. Gore, D.L.S., 1904.*

Township 53.—This township can be reached by the Turtle lake trail from Battleford, but it is not a good road. The soil is a sandy and clay loam, and if the land was cleared might be suitable for mixed farming. The general surface is slightly rolling and covered with poplar and willow brush, and scattered poplar and spruce timber. The timber is poplar up to 14 inches diameter and spruce up to 24 inches diameter, scattered about the township. There is a little hay round some of the sloughs and near the shore of Turtle lake. The water in Turtle lake and in the ponds is fresh. This lake occupies about five sections in the southeast corner of the township. There are no water powers. The climate is similar to that in other parts of the district, but is more subject to summer frosts than the more open country. The fuel is poplar, growing all over the township. There are no stone quarries and no minerals. Moose were the only game seen. Jackfish are very plentiful in Turtle lake.—*T. S. Gore, D.L.S., 1904.*

Range 20.

Township 29.—The soil in this township is a deep clay loam, except a few flats of heavy clay, especially about section 20. It seems best adapted for grazing purposes, as I think it is apt to be too dry for agriculture, except in very wet years. There are no streams, but two small lakes and a number of sloughs furnish a supply of good water. There is no timber, stones, fuel or minerals of any kind to be found in the township. There is a small amount of hay on nearly every section, but nowhere much. Antelope and a few duck were the only game seen.—*Abel S. Weekes, D.L.S., 1904.*

Township 30.—This township, which lies to the southeast of Kiyiu lake, is a heavy clay loam, with some small stone in places, and appears to be well adapted for any kind of agriculture, but the climate is probably too dry for profitable grain raising. There are no streams, but two small lakes and a number of deep sloughs furnish an abundant supply of good fresh water. There is plenty of hay in all parts of the township, but no timber, no fuel nor minerals of any kind were seen. Antelope and duck were the only game seen.—*Abel S. Weekes, D.L.S., 1904.*

Township 31.—The soil in this township is a deep clay loam in the eastern part while the central and southwestern parts is a heavy bare clay with no alluvial soil, and is of no apparent use. There is considerable hay in the northern part, and a few sloughs of good fresh water in the southern and southwestern parts, which slope down to Eagle lake. The water is somewhat alkaline. There is a small creek emptying into Eagle lake, but it is dry most of the time. The township is best adapted for grazing purposes, as it seems too dry for agriculture. A few duck and antelope were the only game seen. There is no timber, fuel, stone or mineral of any kind to be found in the township.—*Abel S. Weekes, D.L.S., 1904.*

Township 32.—This township is a deep clay loam with occasional flats of heavy clay. It is well adapted for mixed farming, though rather too rolling for grain raising on a large scale. There are occasional summer frosts. There is an abundance of hay and also surface water of good quality, but no running streams. There is no timber, fuel nor minerals. The only game seen was antelope and duck.—*Abel S. Weekes, D.L.S., 1904.*

Township 33.—This township is a deep rich clay loam, but too rolling for convenient cultivation. It is well adapted for grazing purposes and there is an abundance of hay, especially about the central parts, but there is no shelter or fuel of any kind. There is no timber or scrub. There are a number of dry grass sloughs that contain plenty of good water in most years. There is no running water. There are no minerals of any kind. Duck, a few chicken and antelope was the only game seen.—*Abel S. Weekes, D.L.S., 1904.*

Township 34.—This township lies at the south end of Tramping lake on the old trail from Saskatoon to Edmonton. This trail was only visible in places in the spring, but it is now worn down somewhat by land seekers and surveyors, freighting supplies. It is very soft in the spring, but in dry weather is good. The soil is a heavy clay loam so deep that only in a few places do the pits expose the subsoil. The projected line of the Grand Trunk Pacific railway passes through the northeast corner of this township. The surface is entirely prairie, there being no timber or scrub of any kind except a few dry poplar in the gulches running into Eagle creek. Hay is abundant in all parts of the township, especially in the southwestern part. There is a number of sloughs of fresh water which might dry up some seasons. Well water would probably be alkaline. There are no running streams except Eagle creek, which runs out of Tramping lake in section 34 and as this is very often dry in this part, it would not be available for water power. There are no minerals or stone quarries. Duck, chicken and a few antelope were the only kinds of game seen. The township is well adapted for any sort of agriculture, but especially for grazing purposes, as I am of the opinion that there are some summer frosts.—*Abel S. Weekes, D.L.S., 1904.*

Township 52.—This township can be reached by my survey trail from Emma-ville post office; it is chopped out and bridges built where necessary, the latter will probably stand for several years, as the water in creeks is abnormally high this year. The road is bad. The soil is generally a good clay loam, but rather stony. It is suitable for any of the usual crops of the country. The surface is generally slightly rolling, and is almost entirely covered with poplar and willow brush to fifteen feet in height with bluffs of larger timber. The timber is poplar from 4 inches to 10 inches in diameter, and a few clumps of spruce up to 12 inches, the latter is scattered about near the middle of the township. The poplar is all over the township, but more dense in the eastern half. There is no hay except a little on section 8, south of the lake there. The water in the lakes is fresh and apparently permanent. Turtlelake river, where it flows through the southern part of the township, is a large stream from three to ten feet deep and a hundred feet wide. It runs from one to five miles per hour in different places. The stream running out of the lakes into Turtlelake river is about 60 links wide and 3 feet deep and runs about four miles an hour. After a succession of dry seasons, however, there is probably very little water in either of them. All the northern and eastern part of the township is singularly dry, with very few ponds or sloughs. There are no water powers. The climate is variable. There was ice formed on June 13. There are no stone quarries, but plenty of granite boulders. There are no minerals. Signs of deer and moose were seen, but no small game, but a few ducks.—*T. S. Gore, D.L.S., 1904.*

Township 53.—This township can be reached by an old trail, running westward from the Meadow lake trail, leaving the latter between Turtle lake and Brightsand lake; the trail is poor and little used. The soil is sandy on the higher lands and vegetable loam on the flats. It would be suitable for mixed farming. The surface is slightly rolling and most of it is covered with scrub and clumps of poplar and spruce. The timber is poplar and spruce up to 14 inches in diameter, and is scattered about the township, but principally in the north and east portions. There is considerable good hay on sloughs south and west of Brightsand lake. The water is fresh and good particularly in Brightsand lake and the stream flowing out of it on the southwest side. Brightsand lake occupies more than one-third of the township, and is a beautiful clear water lake with clean sandy and stony bottom; it extends about two miles north of the township. The stream running out of the lake is about fifty links wide, and two or three feet deep flowing about three miles an hour. It overflows its banks for about ten chains wide during high water for about two miles down from the lake. There are no water powers. There was ice formed in August, otherwise the climate appears good. The only fuel is poplar, scattered all over the township. No stone quarries or minerals were noticed. The game is deer, moose and a few ducks. There are plenty of whitefish and jackfish in Brightsand lake.—*T. S. Gore, D.L.S., 1904.*

Range 21.

Township 27.—This township is rolling prairie, except in the eastern part, where a large valley about one hundred and fifty feet deep runs through the entire length of the township. There is a small creek, dry at most times of the year, running to Snipe lake. The soil is a clay loam of fair quality but is very stony. It is of very little use except for grazing purposes. There is a large marsh in sections 8 and 9 that evidently has water in it all the time. There is no other water in the township. There is a little hay in all parts of the township, but nowhere much. There is no timber, fuel or mineral in the township. Antelope were plentiful but no other game was seen.—*Abel S. Weekes, D.L.S., 1904.*

Township 28.—This township is so badly cut up by several large coulées running through it that it is of no use for farming purposes, but should be of some value for

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grazing. The soil is generally a clay loam of good quality but is very stony. There is a good deal of hay in all parts of the township. There is no permanent water except one deep marsh on section 29. A few hay sloughs on section 30 have water in them most of the time. There is a creek in the large valley that runs across the southern part but it is generally dry. There is no timber, fuel or mineral of any kind. Duck and a few antelope were the only kinds of game seen.—*Abel S. Weekes, D.L.S., 1904.*

Township 29.—The soil in this township is a deep clay loam and should be well suited for any kind of farming if the climate is not too dry. There is an abundance of hay in all portions of the township and in the southern portion the sloughs will contain water most of the summer. There is no permanent water. There is no timber either for building or fuel, and no minerals of any kind. No game was seen except antelope, which were fairly numerous.—*Abel S. Weekes, D.L.S., 1904.*

Township 30.—About one-half of the surface of this township is a clay flat, formerly covered by the waters of Eagle lake, and is of no use whatever; the balance is mostly clay loam of good depth but is too stony for cultivation. The northeastern portion of the township is good land and fairly free from stone. It is suitable for any kind of farming, but I suspect it is too dry for it to be profitable. The only water is Eagle lake, and it is not very good. There is only one point in the whole circumference where the banks are solid enough for animals to get to the water. There is a little hay in the southwest and northeast corners of the township but no timber, fuel or minerals. No game, except antelope was seen.—*Abel S. Weekes, D.L.S., 1904.*

Township 31.—The soil in the northern portion of this township is a deep rich clay loam suitable for any sort of agriculture, though I think it is better for grazing purposes than any other. The southern portion, which slopes to Eagle lake, is a bare white clay and is of very little use. There are several deep sloughs of good fresh water in the northern portion but no running water. In the southern portion there is no water except Eagle lake, which is somewhat alkaline. There is no timber, fuel nor mineral of any kind in the township. Duck and a few antelope were the only kind of game seen.—*Abel S. Weekes, D.L.S., 1904.*

Township 32.—The soil in this township is a deep clay loam and is well adapted for any kind of agriculture, although I think in average years the climate will prove too dry for successful grain raising. The surface is gently rolling prairie generally free from stone. There is no running water and very little surface water, but any seen was of good quality, so probably good water could be obtained at a moderate depth. There is no timber, fuel or mineral of any kind to be found in the township. The only game seen was a few duck and antelope.—*Abel S. Weekes, D.L.S., 1904.*

Township 33.—The soil in this township is chiefly a heavy deep clay loam, and should be well adapted for any sort of agriculture. There is very little fresh water in the township, Curley lake, near the centre, being slightly alkaline, but not enough to prevent its use by stock. There are no other bodies of water in the township. There is no timber, fuel nor minerals of any kind in the township. A few antelope and ducks were the only game seen.—*Abel S. Weekes, D.L.S., 1904.*

Township 34.—This township is a heavy clay loam, except a small patch of sand hills on sections 5, 6 and 7. It is well adapted for mixed farming, though the central part is too rolling for convenient cultivation. There is some hay in the central and southeastern parts, but not in any large quantities. There are a few deep sloughs in the southern part of the township, but no other water. There is no timber or mineral and no fuel of any kind. The only game seen was duck and a few antelope.—*Abel S. Weekes, D.L.S., 1904.*

Township 52.— This is reached by Onion lake trail from Battleford to Emma-ville post office and thence east by my survey trail. The road is fairly good. It is mostly light sandy soil, not much good for anything but a cattle run. The surface is rolling and scrubby with some prairie. The timber is scrubby poplar up to 12 inches in diameter, and scattered all over the township. There is a little hay along

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the creek through the middle of the township. The water is fresh. There are two good creeks, one through the westerly part of the township about ten feet wide and four feet deep, running two miles an hour; and another one running from the north into lake No. 2 about twice the size of the former. There are two small lakes in the west part of the township with good water and plenty of jackfish and some other kinds of fish. The land is not liable to be flooded, except a small area adjoining the south part of lake No. 2. There are no water powers. The summer was cool, and summer frosts were not uncommon. Poplar is the only fuel; and it is scattered all about the township. There are no minerals and no exposed rock. Ducks, and a few prairie chickens were the only game seen.—*T. S. Gore, D.L.S., 1904.*

Township 53.—This township can be reached by an Indian trail which runs through the northern part of it. This trail branches off from the Battleford and Meadow lake trail and goes south of Brightsand lake. The trail is poor and but little used. The soil is generally a rich black loam, and would be suitable for any of the products of the country. The surface is rolling and much broken by little pot holes with water in them, surrounded by dense willow thickets. It is nearly all covered with a thick growth of poplar and willow and a tangle of various kinds of underbrush. There is a quantity of good poplar up to ten or twelve inches in diameter scattered all over the township; and a little spruce up to fourteen inches in diameter on the west half of section 18. There is very little hay; a small quantity could be obtained around sloughs in the southwest part of the township. There are no water powers. There is plenty of fresh water in sloughs and ponds scattered all over the township. There is a plentiful rainfall and frosts are common in summer, as appears to be the case wherever the country is thickly covered with bush. The only fuel is poplar, which can be had in any part of the township. There are no stone quarries or minerals. Deer and ducks were the only game seen.—*T. S. Gore, D.L.S., 1904.*

Range 22.

Township 27.—This township may be conveniently reached by taking a trail leading westerly from Saskatoon and crossing Eaglehill creek, where it issues from the south end of Tramping lake. After reaching the top of the west bank of the valley of Eaglehill creek, one may strike across the prairie in a southwesterly direction to township 27, range 22. The old trail from Duck lake to Red Deer forks that passed through the southern portion of township 28, range 22, is obliterated in its vicinity and it does not appear to have been travelled for some years past. The soil is principally a brown clay and the northerly portion of the township is mainly hard and hummocky. The southerly portion is good second-class land, while the northern portion is third class. The various grains, such as wheat and oats; and vegetables, such as potatoes, carrots, onions, &c., could no doubt be grown on this land with a good measure of success when it is once brought under cultivation unless the amount of rainfall was insufficient. The greatest apparent drawback would be the labour of breaking the land, but after being broken, the soil would no doubt be found fertile and comparatively mellow. The growth of grass is fair or below the average. The surface is open prairie throughout; the southern portion of the township being gently rolling, the central portion rolling and the northern portion high rolling land. There is no timber in the township. There are no hay meadows of any value. No water was found in this township when it was surveyed and there are no water powers. The climate during the past summer was warm and dry. The amount of rainfall was very limited being, apparently, much below the average. There were no summer frosts. No trace of any kind of fuel was noticed in the township. There are no stone quarries. No indications of any minerals of economic value were seen. Antelope are numerous and there are a few coyotes and red foxes. A few badgers were also seen in the township.—*Geo. Ross, D.L.S., 1904.*

Township 28.—This township can be conveniently reached by a trail leading westerly from Saskatoon and crossing Eaglehill creek, where it issues from the south end of Tramping lake in the northeastern part of township 34, range 20, west of the third meridian. After reaching the top of the west bank of the valley of Eaglehill creek one may reach township 28, range 22, by striking southwesterly across the prairie. The trail from Saskatoon to Tramping lake is in good condition, and one may easily travel across the prairie from the south end of Tramping lake to the township under consideration. The old trail from Duck lake to Red Deer forks passing through the southern part of this township does not now appear to be travelled. In many places it is obliterated. The soil is mainly a hard clay or clay loam, the greater portion of the township being hard, hummocky land. The labour of breaking or bringing the soil under cultivation would, no doubt, be rather difficult, but when once broken the soil would probably be comparatively mellow and adapted for raising the various crops, such as wheat and oats, and vegetables, such as potatoes, beets, carrots, onions, &c. The growth of grass in this township is only fair or rather below the average. The surface is open prairie, mainly high rolling land and the central portion of the township between the north and south boundaries is broken by gullies from about 50 to 90 feet in depth, extending easterly and westerly through the township. There is no timber in the township. The only water found in this township when it was surveyed was in two marshes of limited extent, one in the southeast quarter of section 11 and the other in the southeast quarter of section 33, in each of which there was about 6 inches of fresh water. There are no water powers. There is no hay in this township. During the past season the summer was warm and dry, the rainfall being very limited, and apparently much below the average. There were no summer frosts. There is no timber for fuel and no indication of lignite or coal veins. Fuel was obtained for our purposes during the survey, along the South Saskatchewan. There are no stone quarries in the township, but large quantities of field stone, mainly granite, are scattered over the surface. No trace was observed of any mineral of economic value. Antelope are quite numerous and there are also a few coyotes and red foxes. A few badgers were also noticed.—*Geo. Ross, D.L.S., 1904.*

Township 29.—This township can be most conveniently reached by taking a trail leading westerly from Saskatoon and crossing Eaglehill creek, where it issues from the south end of Tramping lake. After reaching the top of the ascent of the west side of the valley of Eaglehill creek, this township may be reached by striking across the prairie. The trail above mentioned is in good condition. The soil is mainly a very hard clay loam, which I have rated as third class for agricultural purposes. When this township was surveyed, the greater portion of its surface was seamed with cracks opening on an average, about half an inch at the surface. In the lower portions of the township, the soil was baked and very hard, the cracks being much wider and deeper than those in the higher portions. There is a fair growth of grass generally throughout the township, and it is quite suitable for ranching purposes and although at present the soil seems rather stiff, for agricultural purposes, if properly tilled it would probably become more mellow and the various grains and vegetables usually grown in the district might, no doubt, be grown on it with success. The surface is open prairie. There is no timber in this township. There are a number of marshes varying in extent from about one to 50 acres, scattered over this township, except in the southwestern portion thereof. In the greater number of these marshes there is a good growth of hay. These marshes would occupy about 2 per cent of the surface of the township. The only water found was in marshes and they were fast drying up. The only water of any consequence found was in the marsh at the northeast corner of section 34, and the northwest corner of section 35, and also in the marsh at the southeast corner of section 30. This marsh also occupies the southwest corner of section 29, the northwest corner of section 20 and the northeast corner of section 19.

The water found was fresh and good. The land is not liable to be flooded and there are no water powers. Last summer was warm and dry and according to indications, the amount of rainfall and dew was much below the average. There is no fuel in this township. The nearest points from which fuel was obtained was along the South Saskatchewan or from the immediate vicinity of Tramping lake. No coal or lignite veins were discovered in the township. There are no stone quarries in this township. No minerals of economic value were found in the township. Antelope are quite numerous and there are a few prairie wolves, red foxes and badgers.—*Geo. Ross, D.L.S., 1904.*

Township 30.—This township can be conveniently reached by taking a trail leading westerly from Saskatoon to a point immediately south of the south end of Tramping lake in the northeastern part of township 34, range 20, west of the third meridian, where Eaglehill creek is crossed. After ascending to the top of the west bank of the valley of Eaglehill creek one may reach the township under consideration, by striking southwesterly across the prairie. The trail from Saskatoon to Tramping lake is in good condition. The soil in this township is a heavy clay loam, and when surveyed it was hard and hummocky. It would, no doubt, be hard to break but when once under cultivation it would probably become comparatively mellow, and would be adapted for the growth of various grains and vegetables usually grown in the district. There is a fair growth of grass in this township and it is fairly well adapted for grazing and ranching purposes. The surface is open prairie and is mainly high rolling land, broken with scattered marshes. A fair quality of hay is found in the marshes, which are scattered pretty generally throughout the township and occupy about three per cent of its surface. These marshes vary in size from one to two acres to forty or fifty. There is no timber in this township. The only water found was in the marshes and ponds. It was fresh and of a good quality. The greater number of the marshes dry up during the summer but a few of the larger ones would retain water throughout the year. The land is not liable to be flooded. There are no water powers. Last summer was warm and the rainfall very limited, much below the average. There were very few storms and no indications of summer frosts. Apparently no fuel of any kind can be procured in the township. During the summer we procured our wood for fuel from the vicinity of Tramping lake, although the supply there is quite limited. There are no stone quarries but there are considerable quantities of field stones scattered over the township, mainly granite. No minerals of economic value were found. Antelope are quite numerous and there are a few red foxes and prairie wolves. Considerable numbers of wild ducks were seen in the vicinity of any open water and there are also a few sandhill cranes.—*Geo. Ross, D.L.S., 1904.*

Township 31.—This township may be reached by taking a trail leading westerly from Saskatoon. After passing the southerly end of Tramping lake one may strike southwesterly across the prairie. The trail from Saskatoon to Tramping lake is in fair condition. The soil is mainly a hard clay loam. When surveyed it was very dry and seamed with cracks; hard hummocky land. There is a fair growth of grass generally in the township and it would be very suitable for ranching purposes. The soil seems rather stiff for agricultural purposes, though when cultivated it would become more friable, so that it could be worked with less labour than appears at present. I have rated the soil mainly as third class land. There are marshes varying from about one acre to fifty acres in extent with a few still larger ones scattered about the township and occupying about three per cent of its surface. In these marshes generally there is a fair growth of a good quality of hay. These hay lands are scattered generally throughout the township and not confined to any particular portion of it. The water found in the marshes was all fresh and of good quality, except in a marshy pond on the line between sections 35 and 36, which contained slightly alkaline water. Along the southerly portion of the township there is a creek that was dried up when the township was surveyed except for a few shallow and stagnant marshy pools. There are sev-

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eral marshes in the north half of the township in which there is from one to three feet of water. Those would apparently retain a supply of good water throughout the season. The land is not liable to be flooded. There are no water powers. The summer season of 1904 was warm and the amount of rainfall was very limited. There were no summer frosts. There is no fuel in this township. There is no timber and no indications of coal or lignite were seen. There are no stone quarries although the land has scattererd over it and near the surface many field stones of medium or small size, mainly granite. No minerals of economic value were noticed. Antelope are quite numerous and a considerable number of wild duck were noticed.—*Geo. Ross, D.L.S., 1904.*

Township 32.—This township may be conveniently reached by taking a trail westerly from Saskatoon, and crossing Eaglehill creek, where it issues from the south end of Tramping lake in the northeasterly part of township 34, range 20, west of the third meridian. This trail is in good condition. After ascending to the top of the western bank of the valley of Eaglehill creek, one may reach this township by striking across the prairie in a southwesterly direction. The soil is mainly a heavy clay loam, and considerable portions of the township are hard and hummocky. The northeasterly portion of the township is second class land and the remainder I have rated as third class for agricultural purposes; but I have no doubt that when the soil is brought into cultivation, it will be found to be fairly well adapted for raising the various grains such as wheat and oats and vegetables, such at potatoes, carrots, onions, &c. The surface is open rolling prairie, there being no timber whatever in the township. There are no hay meadows of any value. The only water found was in the marshes and it was fresh and good, except in a small marsh on the limit between sections 2 and 3, which contained slightly alkaline water. There are no available water powers. The summer season of 1904 was warm and dry, with a very limited rainfall. The amount of rainfall was apparently very much below the average. There is no timber for fuel and no traces of any coal or lignite veins were noticed. There are no stone quarries in this township. No indications were seen of any minerals of economic value. Antelope are quite numerous, and in the large marsh in sections 28, 29, 30, 31, 32 and 33, there are vast numbers of wild ducks. There are also a few red foxes and coyotes. A few wild geese and sandhill cranes were also seen.—*Geo. Ross, D.L.S., 1904.*

Township 33.—This township may be conveniently reached by taking a trail westerly from Saskatoon and crossing Eaglehill creek, where it issues from the south end of Tramping lake, in the northeasterly part of township 34, range 20. This trail is in good condition. After ascending to the top of the west bank of the valley of Eaglehill creek, one may strike across the prairie to the part of the township it is desired to reach. The soil is mainly a clay loam, being hard and hummocky in the southern portion of the township. It would be fairly well adapted for the various agricultural purposes of growing the different grains and vegetables usually raised in the district. Although on the whole it is fairly well adapted for agricultural purposes, I do not consider any of it to be first class, but have rated it as second and third class and there is some flat land with alkaline soil in sections 32, 33 and 34 that I have rated as fourth-class land. There is a fair growth of grass generally throughout the township and it would be fairly suitable for grazing purposes. The surface is open prairie, being mainly rolling land. The northwestern portion of the township is high rolling land and the northeastern is gently rolling or nearly level land. There is no timber in the township. In sections 11 and 12 and the southeastern portion of section 14, there is a large marsh with a good growth of hay around its edge of about from one to two chains in width. In the northeast quarter of section 20 and the southeast quarter of section 29 there is a hay meadow of about eighty acres in extent, with a good quality of hay. In the northeast quarter of section 34 and the northwest quarter of section 35, there is also a hay meadow of about eighty acres in extent with a heavy growth of hay. Besides these three, are some small marshes scattered through the township with a good growth of hay. The only water found was

in the marshes and this was good and fresh. The water supply in the larger and deeper marshes would not dry up during the year. There are no water powers. The summer season during the year 1904 was warm and dry. The amount of rainfall was very limited, being apparently much below the average. There were no summer frosts. No timber for fuel grows in the township and no indication of coal or lignite veins was noticed. There are apparently no minerals of economic value to be found in this township. Antelope are quite numerous and there are a few coyotes and red foxes. Large numbers of wild ducks breed in the marshes and there are also a few sand hill cranes.—*Geo. Ross, D.L.S., 1904.*

Township 34.—This township can be most conveniently reached by a trail from Red Deer forks to Battleford, which passes within three-eighths of a mile of the northwest corner of the township. There is a considerable amount of travel upon it at present and it is in good condition. The soil in this township is mainly a light sandy loam. In sections 7 and 8 and the south portions of sections 17 and 18 the soil is mainly clay. In the northwest quarter of section 13 and the northeast quarter of section 14, and also in the northeast quarter of section 23 and in the northwest quarter of section 24, there are some low sand drifts or ridges and in sections 4, 5, 7 and 8 there are some alkaline flats. There is a good growth of grass in the township and it would be suitable for grazing land. It is also well adapted for grain growing and is mostly second-class land. The surface is rolling or gently rolling throughout. There is no timber. There are many small and a considerable number of medium-sized marshes scattered pretty generally through the township, in which there is a good growth of grass suitable for hay. And in sections 3, 4 and 10 a large hay marsh extends from White Heron lake in a southeasterly direction into township 33, range 22. The water in the marshes and ponds is mainly good and fresh, although in White Heron lake and in the small creek running into it on the west it is slightly alkaline as is also the water in the marshes extending from south portion of this lake. The land is not liable to be flooded. There are no water powers. The weather during the past season was warm and dry. The amount of rainfall was very limited, apparently much below the average. There were no indications of summer frosts. There is no timber for fuel in the township and no indications were seen of veins of coal or lignite. There are no stone quarries, and no traces of minerals of economic value were seen. Antelope are numerous and there are a few red foxes and coyotes. There are also considerable numbers of wild ducks and a few prairie chickens.—*Geo. Ross, D.L.S., 1904.*

Township 52.—The township is reached by the Battleford and Onion lake trail. The route of this trail, as surveyed is now branched off from in township 50, range 21, and runs to Onion lake via Emmaville post office, which is on the southeast quarter of this township. The road is fairly good in dry weather. The bridge over Englishman river at Emmaville was carried away this spring and I had to replace it by a new one before I could cross with my survey supplies. I came in via Edmonton and down the Saskatchewan in a scow of fifteen tons capacity, and landed all my supplies for the season at a point on the river ten miles southwest of Emmaville. I found the route a very good one by which to get into this part of the country with supplies in the early spring. I took nine days to make the trip down the river; about 200 miles. The soil in this township is generally rather light and sandy, though there is some good sandy loam and black loam in places. It is best suited for mixed farming and stock raising. The western part of the township is mostly flat, partly open and partly scrubby and a good deal of the land adjoining Englishman river on the west is flooded this year. The eastern half of the township is high rolling land covered with poplar and willow scrub and small poplar, with open spaces. The only timber is the small poplar, scattered about. There is quite a quantity of fairly good hay throughout the central portion of the township. The water is fresh but hard and is in ponds and sloughs everywhere this season. But I am informed that seven years

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ago these were nearly all dry, and Englishmen river, which is now six feet deep and 30 feet wide, could be crossed almost dry shod. This river flows from north to south through the township, and runs 5 or 6 miles an hour. It has overflowed a large swamp on sections 33, 34, 27 and 28 to a depth varying from 1 to 10 feet. A small water power might be developed by building a dam on the river on section 16. There were heavy night frosts till June 1, and it is said to be liable to summer frosts. The only fuel is small poplar scattered about the township. There are no stone quarries and no minerals. Ducks and prairie chickens were the only game seen.—*T. S. Gore, D.L.S., 1904.*

Township 53.—This township lies about four miles north of the Battleford and Emmaville trail, and can be easily reached by wagons from the latter place. There is an old Indian cart trail running through the northern part of the township which goes from Onion lake to Brightsand lake, but it is in bad condition now, much overgrown with brush and little used. The soil is generally clay and black loam, but in many places stony. It is suitable for the usual products of the country. The surface is rolling, about one-third prairie, the balance scrubby, with bluffs of small poplar. The only timber is small poplar scattered about the township. There is considerable good hay in small areas scattered throughout the township. The water is fresh and plentiful in sloughs. Englishman river runs through the township, and is about 25 feet wide and 2 feet deep. It runs about three miles an hour. Very little land is liable to be flooded by it. There are no water powers. The climate is good, though there is more or less summer frost. The only fuel is small poplar scattered about the township. There are not stone quarries and no minerals. Ducks and a few deer were the only game found.—*T. S. Gore, D.L.S., 1904.*

Range 23.

Township 27.—This township can be conveniently reached by a trail leading westerly from Saskatoon and crossing Eaglehill creek at the south end of Tramping lake in the northeasterly part of township 34, range 20, west of the third meridian. After crossing Eaglehill creek one may strike southwesterly in the desired direction across the prairie. The trail leading westerly from Saskatoon to the south end of Tramping lake is in good condition. The soil is mainly composed of a brown clay, the greater portion of which may be described as hard, hummocky clay land. The various grains, such as wheat and oats, and vegetables such as potatoes, carrots, turnips, beans, &c., could no doubt be successfully grown in it unless the rainfall were insufficient. The breaking of the soil would be rather difficult, but after being broken it would become mellow and could be cultivated with comparative ease. There is a medium growth of grass in this township, but rather below the average, so that it would not make first-class grazing land. The surface is open prairie. There is no timber in this township. A fair quality of hay grows in a hay meadow of about a thousand acres in extent in sections 29, 30, 31 and 32. A more inferior quality of hay grows in another hay meadow of about one thousand acres, situated in sections 1, 2, 10 and 11. No water was found in this township when surveyed. The land generally is high and not subject to floods, but the hay meadows mentioned would, undoubtedly be covered with water in a wet season or in the spring to a depth of from 1 to 3 feet. There are no water powers. The weather during the past season was warm and dry, with very few storms of any kind, and no summer frosts. There appears to be no available fuel of any kind in the township. There are no stone quarries nor traces of any minerals of economic value. Considerable numbers of antelope were seen in this township. There are also a few coyotes, red foxes and badgers.—*Geo. Ross, D.L.S., 1904.*

Township 28.—This township may be conveniently reached from the trail leading from Battleford to Red Deer forks, by leaving said trail when west of this town-

ship and striking easterly across the prairie. The trail mentioned is in good condition. The soil consists mainly of a brown clay and in sections 31, 32, 33, 34, 35, 36, 25 and 26, the soil is rather hard and hummocky. The land generally is rated as second or third class for agricultural purposes, but when brought under cultivation it would no doubt be found fairly well adapted for the growth of the various grains, vegetables, &c., usually raised in the district. The growth of grass in the township generally is fair or rather below the average. The surface is open prairie mainly rolling land and the southwesterly portion of the township is broken by a deep valley extending across it. Sections 25, 26, 27 and 28 are also broken by a gully about 50 feet deep. There is no timber in the township. The only water found in the township when it was surveyed was in the pond in the grass marsh in the southwest quarter of section 9, and situated in the bottom of the large valley mentioned. The water at that time was from about 6 to 12 inches in depth and was fresh. The land generally is high and not liable to be flooded. A fair quality of hay is found in the bottom of the large valley in sections 9, 8, 17, 20 and 19, in which there is an area of about one thousand acres of hay land. In the southwesterly part of section 5 and the east part of section 6 there is also a hay meadow about 50 acres in extent with a fair growth of hay. There are no water powers. During the past season the weather was warm and dry, with very few storms and no summer frosts. The rainfall during the past summer was very limited, being apparently much below the average. There is no timber for fuel in this township and no traces of coal or lignite were seen. There are no stone quarries and no indications were noticed of minerals of economic value. Antelope are quite numerous and there are a few prairie wolves, red foxes and badgers. —*Geo. Ross, D.L.S., 1904.*

Township 29.—This township can be reached in a convenient manner by the trail from Red Deer forks to Battleford. This trail passes at a considerable distance west of this township and should be left when north or northwest of the township, then by taking a southerly or southeasterly course across the prairie the township may be readily entered. The Red Deer forks and Battleford trail can be reached by means of trails leading westerly from Saskatoon, without taking the trail from Saskatoon to Battleford. The soil is mainly a hard clay loam and when the township was surveyed in July, was very dry and the greater portion of it was seamed and cracked so that it might be described as hard, hummocky land. There is a fair growth of grass on nearly all the land and it would make suitable grazing grounds were it not that the water supply is very insufficient. The soil appears to be rather stiff for cultivation but would no doubt be more mellow when broken and worked, so that the various grains and vegetables usually grown in the district could be raised with success as far as the soil is concerned, and I have mainly classed it as third-class land. The surface is bare prairie, being nearly level, gently rolling or rolling land. There is no growth of any kind of timber in this township. There are no hay meadows of any value, although there are a few small marshes scattered over the township. The only water found in the township was in a small marsh about 250 feet long and 100 feet wide about the centre of section 27. This water was very good, being fresh and soft. The land is not liable to flood and there are no available water powers. While engaged on the survey of this and adjoining townships, the summer season was mainly hot and dry. The rainfall was very limited and judging from the surface of the ground it was much below the average. There were no summer frosts. There is no fuel of any kind. There are no stone quarries nor do there appear to be any indications of minerals of economic value. The game animals observed were antelope, which appear to be quite numerous; a few foxes and prairie wolves were also occasionally seen. —*Geo. Ross, D.L.S., 1904.*

Township 30.—This township can be conveniently reached by striking easterly or southerly from the trail leading from Red Deer forks to Battleford. This trail is

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travelled to a considerable extent at present and is in good condition and one may travel readily across the prairie between the Battleford trail and this township with horses, vehicles, &c., The soil is mainly a hard or stiff clay loam. At present it is very dry and about 50 per cent of it is what might be called hummocky land, but there is a fair growth of grass on nearly all the land and it would be suitable for grazing purposes. The soil seems to be rather stiff for easy cultivation, but after being broken up and worked would probably be more mellow so that wheat, oats, &c., and the various grains and vegetables grown in the district could be raised on it with considerable success. The surface is nearly level, gently rolling or rolling prairie. There is no timber whatever. There is a good hay meadow of about 50 acres in the north part of section 33, and there are a few small marshes scattered over the township, but their total percentage is very small. The only water found in the township was in the marshes and they were nearly all dry. There was about 16 inches of water in the hay meadow in the north part of section 33 and some water was also found in the small scattered marshes in the western central part of the township. All the water found was of a good quality and fresh and soft. The land is not liable to flood. There are no water powers. While we were in the vicinity (July) the summer season was mainly hot and dry and the rainfall during the past season was too limited for the successful growth of grain, but the season was apparently unusually dry. There were no summer frosts. No fuel of any description was observed. There do not appear to be any stone quarries, and there are no minerals of economic value in this township. Antelope are quite numerous and there are a few foxes, badgers and coyotes.—*Geo. Ross, D.L.S., 1904.*

Township 31.—This township can be conveniently reached by striking easterly across the prairie from the trail leading from Red Deer forks to Battleford. This trail is travelled to a very considerable extent and at present is in good condition. The soil is mainly a stiff clay loam and when the township was surveyed it was hard and hummocky. It would be rather difficult to break the land to bring it into cultivation, but after being broken and cultivated, it would no doubt become more friable and the various grains and vegetables usually grown in the district could no doubt be grown in it with success. The township is covered with a fair growth of grass and would make fairly good grazing lands. The surface is prairie, being mainly nearly level or gently rolling. There is no timber in this township. There is a good hay meadow in the south half of section 1, and the southeast quarter of section 2 of about sixty acres in extent; and in the east half of section 3, and west half of section 2 there is a hay meadow with a good growth of hay, about 250 acres in extent. The only water found was in the marshes and hay meadows and it was fresh and good, but the supply would not be permanent. The land is not liable to be flooded. The summer season of 1904 was warm and dry, the amount of rainfall being very limited and apparently much below the average. No timber for fuel grows in this township and no indications were seen of coal or lignite veins. There are no stone quarries. No traces of minerals of economic value were found. Antelope are quite numerous and there are also a few red foxes and prairie wolves.—*Geo. Ross, D.L.S., 1904.*

Township 32.—This township can be conveniently reached by the trail from Red Deer forks to Battleford which passes through the northwesterly part of it. At present there is a considerable amount of travel on this trail and it is in good condition. The soil is mainly hard clay loam and the surface generally hard and hummocky, but when brought under cultivation the soil would become comparatively mellow and no doubt it will be found to be well adapted for the growth of the various grains and vegetables grown in the district. The surface is rolling or gently rolling prairie. There is no timber. There are no hay lands of much value in this township, but a fair quality of hay may generally be obtained from the various marshes scattered

throughout the township. The only water supply in the township is that found in the marshes. The water is fresh, but only a few of the larger and deeper ones would retain water throughout the season. The land is not liable to be flooded and there are no water powers. During the summer season of 1904, the weather was warm and dry. The amount of rainfall was very limited, apparently much below the average. There do not appear to be any veins of coal or lignite, and there are no stone quarries. No indications were seen of any minerals of economic value. Antelope are quite numerous and there are also a few badgers, coyotes and red foxes.—*Geo. Ross, D.L.S., 1904.*

Township 33.—This township can be conveniently reached by a trail from Medicine Hat to Battleford via Red Deer forks. This trail passes through the township in a northerly direction a short distance west of the middle of the township and is at present travelled to a considerable extent, and is in good condition. The soil is mainly stiff clay loam with considerable quantities of small stone in many places. When the survey was made, the soil, except in the marshes, was very dry and rather hard, but it was generally covered with a good growth of grass and would be very suitable grazing land. The various grains and vegetables usually raised in the district could be cultivated with success, but the soil is rather stiff for cultivation in its present condition, and I have mainly classified it as third-class agricultural land. The surface is prairie, mainly rolling land except in the southern part of the township where the surface is gently rolling or nearly level. In sections 31 and 32 there is a growth of some wolf willow scrub. There is no timber. In the north halves of sections 7 and 8 there are about one hundred and fifty acres of fair hay lands, and a fair quantity of hay can be obtained generally from the various marshes scattered through the township. The only water is that found in the marshes and ponds. They contain fresh water and the supply in many of them would not dry up during the year. The land is not liable to be flooded. During the summer season of 1904 the weather was warm and dry. The amount of rainfall was very limited, being apparently very much below the average. There were no summer frosts. There is no fuel of any kind in this township. There are no stone quarries nor were any indications seen of minerals of economic value. Antelope are quite numerous and considerable numbers of wild ducks breed in the marshes.—*Geo. Ross, D.L.S., 1904.*

Township 34.—This township is conveniently reached by the trail leading from Battleford to Red Deer forks, which passes diagonally through the township, from section 36 to section 4. At the present time there is a considerable amount of travel on this trail and it is in good condition. The soil is mainly a light sandy loam, interspersed with stretches of clay and clay loam in many places. There is a good growth of grass in the township and it is well adapted for grazing. The various cereals, such as wheat and oats, could be raised with success and the vegetables usually grown in the district would also do well in the greater part of the township. The surface is rolling prairie throughout. There are a few patches of wolf willow in section 7, but there is no timber. There is a good growth of grass suitable for hay in nearly all the marshes scattered pretty generally throughout the township and occupying about 3 per cent of its area. There is one small creek in the north part of section five and east part of section seven and west part of section eight, which flows into Ruby lake, which occupies parts of the northeast $\frac{1}{4}$ section 7, the northwest $\frac{1}{4}$ section 8, the southwest $\frac{1}{4}$ section 17 and the southeast $\frac{1}{4}$ section 18. This creek was nearly dry when the township was surveyed (June), but the water was fresh, while that in Ruby lake was very slightly alkaline. Elemer lake in sections 34 and 35, and Zella lake in sections 31 and 32, contain alkaline water, and the large marsh occupying a great portion of the east half of section 32 and also extending into sections 28, 29 and 33, contains alkaline water, but in all the various hay marshes scattered over the township there is good fresh water. In autumn these marshes would be dry, with the exception of the central portion of some of the larger ones. The land is not liable to be flooded.

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There are no water powers. The summer season of 1904 was warm and dry, the amount of rainfall being very limited, and apparently much below the average. There were no summer frosts. There is no fuel of any kind in the township, there is no timber, and no traces of coal or lignite veins were seen. However in many portions of the township suitable trees, if protected from fire, would grow very rapidly. There are no stone quarries. No indications of any minerals of economic value were seen. Antelope are quite numerous and many wild ducks breed in the marshes. There are also a few red foxes, coyotes and badgers.—*Geo. Ross, D.L.S. 1904.*

Range 24.

Township 27.—This township may be reached by taking the Battleford and Medicine Hat trail from either place, which passes through township 27, range 26, and from which a good trail can be made into the township. The surface is generally slightly rolling, but in some places for considerable extent the surface is fairly level. The soil is generally clay without any loam on top and, I think, is better suited for grazing than agricultural purposes. There are several small hay marshes scattered throughout the township. There are no minerals, quarries or water falls in the township. The only game I saw in the township were antelope and duck.—*David Beatty, D.L.S., 1904.*

Township 28.—This township may be reached by taking the Battleford and Medicine Hat trail from either place, which passes through township 28, range 25. From which a good trail may be made. The surface is rolling, with a few scattered small hay marshes. There is a large lake in sections 19, 20, 21, 22, 27, 28 and 30, the water of which is alkaline. The soil is generally hard clay, without any black mould on top and is better adapted for grazing than agricultural purposes. There are no minerals, quarries or water powers in the township and the only game are antelope, duck and geese.—*David Beatty, D.L.S., 1904.*

Township 29.—This township may be reached by taking the Battleford and Medicine Hat trail from either place, which passes through township 29, range 25, and from which a trail can be made into the township. The surface is generally rolling, with hay sloughs scattered throughout. The water in the township is strongly alkaline. The soil is hard clay and is better adapted to grazing than agricultural purposes. There are no minerals, quarries or water powers in the township. The only game I saw were antelope and duck.—*David Beatty, D.L.S., 1904.*

Township 30.—This township may be reached by taking the Battleford and Medicine Hat trail from either place, which passes through township 30, range 25, and from which a trail may be had into the township. The surface is rolling, with a few small lakes and hay marshes. The water is alkaline. The soil is mostly hard clay and is more suitable for grazing than agricultural purposes. There are no minerals, quarries or water powers in the township. The only game is antelope and duck.—*David Beatty, D.L.S., 1904.*

Township 31.—This township may be reached by taking the Battleford and Medicine Hat trail from either place, which passes northeasterly through the township from section 6. The surface is rolling prairie, without any high hills. The soil is hard clay and is better suited for grazing than agricultural purposes. The water in most of the small sloughs is alkaline. There are no minerals, quarries or water powers. The only game I saw in this township were antelope and duck.—*David Beatty, D.L.S., 1904.*

Township 32.—This township can be reached by a very good trail, which runs from Medicine Hat to Battleford, passing through the southeast part of the township, crossing through sections 12 and 13. The surface is rolling prairie with, in places, deep basins with lakes or marshes, notably through sections 34 and 27, with a stream from thirty to fifty links wide, opening up into a lake in sections 21, 22, 16, 17, 8, 9

and 5, and deep marsh passing out into township 31. The soil is generally clay and only in a few places with black soil on top. In many places the clay is so hard that it was necessary to use picks to loosen it when digging the pits. I think the township is more suitable for grazing than for agricultural purposes. The water in the large lake is alkaline, but in most of the small sloughs it is fresh. There are no minerals, quarries or water powers. The only game I saw in the township were antelope and duck.—*David Beatty, D.L.S., 1904.*

Township 33.—This township may be reached by taking the Battleford and Medicine Hat trail from either place, which passes through township 32, range 23, west of the third meridian, and from which township a good trail can be made to said township 33. The surface is rolling prairie, with many ravines, notably one running south through sections 28, 21, 16, 10 and 3 from the south end of a lake in sections 28, 29, 31, 32 and 33. The soil is generally very hard clay without any black mould on top, requiring picks to dig the pits. The township is more suitable for grazing than agricultural purposes. The water in the lakes is alkaline as well as in most of the small sloughs. There are many small sloughs where hay may be cut. There are no minerals, quarries or water powers, the only game I saw were antelope and duck.—*David Beatty, D.L.S., 1904.*

Township 34.—This township may be reached by taking the Battleford and Medicine Hat trail from either place, which passes a few miles east of the east boundary and from which a good trail can be had into the township. The surface is rolling prairie with small sloughs scattered throughout. There is only one lake in the township, on sections 20, 21 and 28, the water of which is alkaline. There are only a few small hay swamps in the township. The soil is generally hard clay requiring picks to dig the pits. There are no minerals, quarries or water powers in the township and it is more suitable for grazing than agricultural purposes.—*David Beatty, D.L.S., 1904.*

Township 39.—This township is situated about fifty-five miles southwest of Battleford, on what is known as Sounding lake trail. This trail passes through comparatively level country, and although not used much during the last few years, is in good condition. Battleford at the junction of Battle and Saskatchewan rivers, is at present the most convenient supply station, postal and telegraph office. The soil of this township is better than those to the west, being for the most part sandy loam, with a clay subsoil. In the central portion of the township is quite an area of rich black loam covered with a splendid growth of long grass and very desirable for grazing or farming purposes. This township is decidedly rolling prairie, there being very few hills in any part of it, with the exception of the land adjoining the large lakes in sections 34, 26 and 23. There is absolutely no timber upon this township, but towards the southeast a number of clumps of willow scrub are growing. Small natural hay meadows are to be found in almost every section, but none of any great extent occur. There is an abundance of water in this township to be found in many sloughs and fresh water lakes. The largest of these latter is to be found in sections 15, 16 and 21. There are also two large alkaline lakes extending through sections 24, 23, 26, 27 and 34. There is no water power on this township. There were no summer frosts experienced during the subdivision of this township, the weather being moderately warm. On July 15, an exceedingly heavy wind and rain storm occurred and also during the two days following rain fell at intervals. There is no fuel to be found upon this township, but a limited supply was discovered in township 40, range 24, where a small poplar grove grows in a ravine. There are no stone quarries. There are no minerals known to exist. No game was observed, with the exception of a few duck.—*J. W. Tyrrell, D.L.S., 1904.*

Range 25.

Township 27.—This township may be reached by taking the Battleford and Medicine Hat trail from either place, which passes through township 27, range 26, and

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from which a good trail can be had. The surface is rolling with a few small hay swamps. The water is mostly alkaline, but I found sufficient fresh water for camping purposes. The soil is generally hard sand, requiring picks to dig the pits. There are no minerals, quarries or water powers in the township. The only game are antelope and duck.—*David Beatty, D.L.S., 1904.*

Township 28.—The surface is rolling prairie with a few small hay swamps scattered throughout. The soil is generally hard clay and is more suitable for grazing than agricultural purposes. The water is mostly alkaline. This township may be reached by taking the Battleford and Medicine Hat trail from either place, which passes through the township. There are no minerals, quarries or water powers in the township. The only game are antelope and duck.—*David Beatty, D.L.S., 1904.*

Township 29.—This township may be reached by taking the Battleford and Medicine Hat trail from either place, which passes through the eastern portion of the township from north to south. The surface of the country is rolling, with occasional small hay sloughs. The soil is generally hard clay and is better adapted to grazing than agricultural purposes. There are no minerals, quarries or water powers in the township. The only game are antelope and duck.—*David Beatty, D.L.S., 1904.*

Township 30.—This township may be reached by taking the Battleford and Medicine Hat trail from either place, which passes through the eastern portion of the township. The surface is rolling, with a few small hay swamps scattered throughout. The soil is generally hard clay and is better suited for grazing than agricultural purposes. The water is mostly alkaline. There is a good spring on section 23 on the south shore of the lake. There are no minerals, quarries or water powers in the township. The only game seen were antelope and duck.—*David Beatty, D.L.S., 1904.*

Township 31.—This township may be reached by taking the Battleford and Medicine Hat trail from either place, which passes a few miles east of the township. The surface of the country is rolling, with a few gullies or ravines and several hay swamps. The soil is hard clay and is better adapted to grazing than agricultural purposes. There are no minerals, quarries or water powers in the township. The water is mostly alkaline, although I found sufficient fresh water sloughs for camping purposes. The game are antelope and duck.—*David Beatty, D.L.S., 1904.*

Township 32.—This township may be reached by taking the Battleford and Medicine Hat trail from either place, which passes through the southeast corner of township 32, range 24, from which township a good trail can be made. The surface is fairly level prairie, with sloughs scattered throughout the township, notably a large one in sections 2, 3, 10 and 11, which in a dry season will be a good hay swamp and this applies to most of the marshes. The soil is hard clay and required picks in digging pits. The water in most of the sloughs is alkaline. The township is more suitable for grazing than agricultural purposes. There are no minerals, quarries or water powers. I saw a few antelope and plenty of duck.—*David Beatty, D.L.S., 1904.*

Township 33.—This township may be reached by taking the Battleford and Medicine Hat trail from either place, which passes through township 33, range 23, and from thence a good trail can be made into the township. The surface is rolling prairie with no high hills. The soil is generally hard clay and in most places we were obliged to use picks in digging the pits. The water in many of the sloughs is alkaline, but we found sufficient fresh water for camping purposes. The township is better adapted to grazing than agricultural purposes. There are no minerals, quarries or water powers. The only game I saw were antelope and duck.—*David Beatty, D.L.S., 1904.*

Township 34.—This township may be reached by taking the Battleford and Medicine Hat trail from either place, which passes through township 33, range 23, from which township a good trail can be made. The surface is rolling prairie with sloughs scattered throughout, notably a large one on sections 7, 8, 17 and 18, which in a dry

season will be a good swamp. There are many small hay sloughs in the township. The water in a lake on sections 22, 26, 27 and 34 is alkaline, as well as in many of the sloughs, but I found sufficient fresh water for camping purposes. The soil is hard clay, requiring picks in most places to dig the pits. There are no minerals, quarries or water powers. The only game I saw in the township were antelope and duck.—*David Beatty, D.L.S., 1904.*

Township 35.—This township is open prairie, undulating and rolling; soil, mostly second class, being sandy loam with clay subsoil. A few small ponds and sloughs, with some very good hay marshes, are scattered over the township, in which some hundred tons of hay could be cut. This township is well adapted to cultivation and grazing. There is no wood or timber of any kind. No fixed rock or mineral was found. Game is mostly waterfowl, but a few antelope are still to be found. Fur-bearing animals are muskrats and red foxes. The most convenient route from this township is by the Red Deer trail to Battleford, but has to be reached across the prairie, and is some sixteen miles distant.—*G. C. Rainboth, D.L.S., 1904.*

Township 36.—This township is open prairie, undulating and rolling; soil, mostly second class, being sandy loam, with clay subsoil. A few small ponds and sloughs, with some very good hay marshes are scattered over the township, in which some hundred tons of hay could be cut. This township is well adapted to cultivation and grazing. There is no wood or timber of any kind and no fixed rock or mineral was found. The game is mostly waterfowl, but a few antelope are still to be found. Fur-bearing animals are muskrats and red foxes. The most convenient route from this township is by the Red Deer trail to Battleford, but this has to be reached across the prairie.—*G. C. Rainboth, D.L.S., 1904.*

Township 37.—This township, situated about sixty-five miles southwest of Battleford, may be reached by what is known as Sounding lake trail, which runs, for the most part, through comparatively level country, and although not travelled much of late years, is in good condition. The town of Battleford is at present the most convenient supply station. It is also a telegraph and post office. The soil in this township is almost altogether a heavy clay, with, however, areas of sandy clay with a clay subsoil. In sections 26 and 27 considerable alkaline clay is to be found. This township is suitable for grazing and general farming purposes. This township varies from level to gently rolling and even hilly prairie. The large ravine running easterly and westerly through the centre appears to be the dividing line between the comparatively level portion to the south and a more broken country towards the north. No timber is to be found upon this township. A large hay meadow containing probably one hundred acres or more is to be found on the east boundary of section 3. The water in this marsh was about one foot or eighteen inches deep when crossed in July, but in all probability it would be dry later in the season. Other small hay marshes occur throughout this township. The lakes in this township are in nearly every case fresh and full of grass. The largest of these lakes appears in sections 23, 24, 25 and 26. It is fresh, full of grass and almost circular in shape. There is no water power to be found in this township. While this township was being subdivided the weather became exceedingly warm, the thermometer registering 100 degrees or more for two or three days. No rain fell, and frosts were unknown. There is no fuel upon this township, but a small supply can be procured in township 40, range 24, west of the third meridian, where there is a small poplar grove. There are no stone quarries in this township. There are no minerals in this township. Only a few duck were seen in this township.—*J. W. Tyrrell, D.L.S., 1904.*

Township 38.—This township is situated about sixty miles in a southwesterly direction from Battleford and almost directly on the old Sounding lake trail. This trail is in good condition and lies through a comparatively level country, but has not been used much for some years. The most convenient supply station at present is

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Battleford, at the junction of Battle and Saskatchewan rivers, where there is also a telegraph and post office. The soil is, generally speaking, sandy clay and sandy soil, with a clay subsoil, but towards the southwest in sections 6, 7, 8 and 17 and thereabouts considerable black loam appears. The whole township has an abundant growth of long grass and is well suited for grazing and general farming purposes. This township varies from gently rolling to level prairie, the only hills of any size appearing in the northeasterly sections. No timber is to be found upon this township. Small natural hay marshes are to be found throughout this township, but none of great size, the largest being about sixteen acres and appearing on the east boundary of section 9. There are no large bodies of water in this township, but fresh water sloughs occur frequently. Probably the most important lake is a fresh water one in sections 20 and 21. No water power exists upon this township. There were no summer frosts experienced and the weather was moderately warm during the subdivision of this township. Rain fell on July 18th for a few hours. There is no fuel to be found upon this township. The nearest supply (and that limited) is to be found in township 40, range 24, west of the third meridian, where a small poplar grove was found. There are no stone quarries in this township. There are apparently no minerals in this township. Some duck, a few sandhill crane and brant geese were seen in this township.—*J. W. Tyrrell, D.L.S., 1904.*

Township 39.—This township, situated about 60 miles in a southwesterly direction from Battleford, is most directly and easily reached by Sounding lake trail, which passes through the northerly half of it. This trail passes for the most part through a level country and although not used much for the past few years, is in good condition for travelling. The nearest and most convenient supply station is Battleford, which is also a telegraph and post office. The soil of this township is generally speaking, sandy clay with a clay subsoil, but loose sandy soil, clay and sandy loam appear in places. It is also quite stony in sections, especially at the south end of the large lake in sections 14 and 15. This township is well suited for grazing and general farming purposes. This township is open hilly prairie, the only portion of any extent being at all level or rolling is that towards the southeast where a few sections are free from large hills. No timber is to be found upon this township. There are a few small natural hay marshes in this township, but none of any great extent. The lakes in this township are numerous and of considerable size, but nearly all alkaline. Fresh water sloughs, however, and some smaller lakes, are to be found in many sections. No water power occurs upon this township. During the subdivision of this township, which took place the second week in July the weather was dry and moderately warm, and entirely free from summer frosts. There is no fuel upon this township. A small poplar grove in a ravine on township 40, range 24 being the nearest available supply and that is very limited. No stone quarries occur upon this township. There are no minerals known to exist. Duck of different kinds, and a few brant geese were seen.—*J. W. Tyrrell, D.L.S., 1904.*

Range 26.

Township 28.—This township may be reached by taking the Battleford and Medicine Hat trail from either place, which passes through township 28, range 25, from which a good trail can be had. The surface of the country is rolling and hilly with several ravines. There are many small hay sloughs scattered throughout the township. The water in all the ponds and many of the sloughs is alkaline. The soil is hard clay and is better adapted to grazing than agricultural purposes. There are no minerals, quarries or water powers in the township. The only game are antelope and duck.—*David Beatty, D.L.S., 1904.*

Township 29.—This township may be reached by taking the Battleford and Medicine Hat trail from either place, which passes through township 29, range 24, and

from which a good trail can be made into the township. The surface is generally rolling, with small hay sloughs or swamps scattered throughout. There is a deep ravine or gully crossing the southwestern portion of the township. The soil is generally hard clay, but there is some sandy soil in the southern tier of sections. The township is more suitable for ranching than agricultural purposes. There are no minerals, quarries or water powers in the township. The only game I saw in the township were antelope and duck.—*David Beatty, D.L.S., 1904.*

Township 30.—This township may be reached by taking the Battleford and Medicine Hat trail from either place, which passes through township 30, range 24, and from which a good trail may be made into the township. The surface is rolling, with small hay sloughs or swamps scattered throughout. The soil is generally hard clay and is more suitable for grazing than agricultural purposes. The water is slightly alkaline, but I found sufficient fresh water sloughs for camping purposes. There are no minerals, quarries or water powers in the township. The only game I saw was antelope and duck.—*David Beatty, D.L.S., 1904.*

Township 31.—There is a good trail from Medicine Hat to Battleford, via Red Deer forks, which passes through township 30, range 25, from which a good route can be found through township 31, range 25, to this township. The soil is mostly a very hard, stiff clay, but portions of it are hard sandy loam, and is not suitable for agricultural purposes, being better adapted for grazing purposes. The surface is rolling open prairie, the nearest timber suitable for fuel being in the valley of Eyehill creek and the south Saskatchewan below Red Deer forks. There are no streams, quarries, minerals or good hay marshes. The water in the larger sloughs is slightly alkaline, and that in the smaller sloughs fairly fresh, but does not constitute a permanent supply. I saw a few antelope and some duck, but no chicken.—*Walter Beatty, D.L.S., 1904.*

Township 33.—This township is open prairie, the northern half undulating and rolling, the southern half hilly and rough, soil mostly class 3, being a sandy loam and hard clay and gravelly subsoil. The grass is fairly good, with a few good hay marshes on the northern half. Small ponds and sloughs intervene among the hills in the southern half. Three lakes were found large enough to traverse, one extending in sections 20 and 21, one in sections 11, 13 and 14 and one in sections 13 and 24, the latter being crossed by the east boundary of the township. The tops of the hills are stony and gravelly, with scant vegetation; the northern half could be cultivated, but the southern half, under present condition, I consider to be unfit for cultivation. There is no fixed rock or mineral in sight. Waterfowl are abundant and a few antelope are met with. Fur-bearing animals are muskrats and foxes. The most convenient route from this township is by the Red Deer trail to Battleford, but has to be reached across the prairie some six miles east.—*G. C. Rainboth, D.L.S., 1904.*

Township 34.—This township is open prairie, undulating and rolling, the soil rates between second and third class, being a sandy loam, with boulder clay and gravelly subsoil, which is very hard and dry. While only fairly well adapted to cultivation, it is a superior township for grazing, supporting rich grasses. A few small hay marshes are found, but of little consequence. Water is scarce. No fixed rock or minerals are found, and no game. Antelope, however, are occasionally seen. Two routes to Battleford are found. One by Red Deer trail and one by Sounding lake trail, either of which has to be reached across the prairie.—*G. C. Rainboth, D.L.S., 1904.*

Township 35.—This township is open prairie, undulating and rolling in the northern tier of sections; hilly in the central part of the township and rolling in the southern part. The soil ranges from class 2 to 3, composed of sandy loam and boulder clay, and gravel subsoil. Several large hay marshes where hundreds of tons of hay can be cut, extend across the northern middle part of the township. A big hay marsh also extends across sections 4, 5, 8 and 9, in which several hundred tons of hay could

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be cut. This township is only medium as regards being fit for cultivation, but is very well adapted for grazing and will eventually be valuable as a hay producing township, as a very large portion of this section of country is better fitted for stock raising, and hay would be essential for wintering stock. There is no fixed rock or mineral in evidence. Fairly good surface water is found in most of the sloughs. Wild fowl abound in the marshes and a few antelope are still found wandering over the country, while muskrats are found in all the ponds and sloughs. No timber or wood of any kind is found. Two routes to Battleford are found by the Red Deer trail and the Sounding lake trail, but these have to be reached across the prairie.—*G. C. Rainboth, D.L.S., 1904.*

Township 36.—This township is open prairie, rolling and undulating, being rated class 2 and 3. Soil is sandy loam with clay and gravelly subsoils. It is fairly suitable for cultivation and well suited for grazing, being covered with rich grasses. Several large hay marshes are found in the southwestern part of the township from which hundreds of tons of hay can be cut. A few sloughs of surface water are found with water fit for use. A small lake partly in sections 19 and 30 was traversed; the water in it is alkaline. No wood or timber of any kind was found. No fixed rock or minerals were met with. Wild fowl are plentiful and a few antelope. Muskrats abound in the sloughs and marshes, red foxes are also found. Two routes to Battleford are found, one by Red Deer trail and one by the Sounding lake trail, but either has to be reached across the prairie.—*G. C. Rainboth, D.L.S., 1904.*

Township 37.—This township, situated about seventy miles to the southwest of Battleford, may be reached by Sounding lake trail, which, though little used during the past few years, is an easy trail, passing through comparatively level country. The town of Battleford is the most convenient supply station, also telegraph and post office. This soil, like that in the townships immediately to the north is almost without exception a sandy clay, with a stiff clay subsoil. Here and there, however, especially towards the northwest portion, are to be found large tracts of heavy clay soil. Everywhere the grass was long and appeared to be well suited for grazing or general farming purposes. This township is almost entirely open, rolling prairie, especially towards the south, where it becomes almost level. The large ravine running through sections 36, 35, 34 and 33 is the most prominent feature. No timber of any kind is to be found upon this township. A large natural hay marsh is to be found in sections 2 and 3 containing probably one hundred acres, but many smaller ones occur in almost every section throughout this township. Many small fresh sloughs and lakes occur throughout this township with here and there a comparatively large body of water. Almost all of these are fresh and full of grass. The two largest lakes are in a ravine which runs through sections 36, 35, 34 and 33, and extends into township 38, range 26, to the north. No water power exists upon this township. The condition of the wild flowers and wild pea vines would indicate that for some few weeks, at least, no frosts had occurred. During the 25th, 26th, 27th and 28th, of June, while this township was being subdivided, the weather was fine and mild. No fuel was to be found upon this township, the supply for cooking purposes at camp having to be procured from a small poplar grove in township 40, range 24, west of the third meridian. No stone quarries occur upon this township. No minerals of economic value are known to exist upon this township. The only game observed in this township were duck of different species and occasionally a few sandhill crane.—*J. W. Tyrrell, D.L.S., 1904.*

Township 38.—This township is situated about sixty-five miles southwest of Battleford, and may be reached from that place by Sounding lake trail, which crosses comparatively level country. The town of Battleford is at the present time the most convenient supply station, telegraph and post office. The soil of this township, although varying considerably is chiefly sandy clay with a clay subsoil containing in some sections gravel and boulders. Alkali flats also appear in some places. The

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strong growth of grass observed everywhere throughout this township would indicate a suitable grazing or general farming country. This is open prairie country and varies from gently undulating to hilly. No timber of any kind is to be found in this township. A few willow and small poplars growing around the shores of sloughs or lakes is all the wood appearing. Natural marsh hay is to be found throughout this township on almost every section, and no doubt a number of the large grassy lakes would be dry enough later in the season to afford a crop of hay. The largest body of water occurring upon this township is to the south in sections 4, 5 and 6 and extends westerly into the next township. It is a large fresh grassy lake. Elsewhere large fresh and alkaline lakes occur, also many small fresh sloughs. No water power exists upon this township. This township was subdivided between June 21 and 24, during which time the weather was fine and mild, there being no sign of summer frosts. Judging from the luxuriant growth of grass, and the abundance of wild pea vine and wild flowers, the weather previous to this time must have been bright and warm, and entirely free from frosts, for at least some weeks. There is no fuel of any kind to be found upon the township, the nearest available supply being a small poplar grove in township 40, range 24, west of the third meridian. No stone quarries occur upon this township. No minerals of value are known to occur upon this township. Antelope in pairs, ducks, geese and a few sandhill crane were observed throughout the township.—*J. W. Tyrrell, D.L.S., 1904.*

Township 39.—This township, which is situated about 65 miles southwest from Battleford, may be reached from that place by what is known as Sounding lake trail; a trail, which though not travelled much of late years, crosses comparatively level country. The town of Battleford is, at the present time, the most convenient supply station as well as telegraph and post office. The soil of this township is chiefly a Judging from the strong growth of grass everywhere observed upon the township, it is well suited for grazing as well as general farming. The surface of this township is entirely that of an open prairie varying from what might be termed gently rolling to that of decidedly hilly country. No timber of any description is found upon this township. A few very small willows or poplars only being found here and there about the shores of some of the lakes and sloughs. Natural marsh hay is found in considerable quantities on almost every section upon this township. One of the largest of these hay marshes or meadows being situated on section 31, where there are about eighty acres of fine natural hay. Many other smaller meadows, however, occur everywhere throughout the township. The largest body of water occurring upon this township is found upon sections 11, 12, 13 and 14, in the form of an alkaline lake, but elsewhere throughout the township fresh water is abundant in the many smaller lakes and sloughs. The largest of these occur upon sections 1, 2, 3, 5, 15 and 24. No water power exists in this township. This township having been surveyed during the month of June, I can only judge of the climate from what was experienced at that time, and the luxuriant growth of grass which was everywhere noticed. Between the 17th and 21st days of June, whilst engaged in subdivision of this township, rain was several times experienced, but nothing in the shape of summer frosts, nor could any of these have occurred for some time previously since the wild flowers and particularly the wild pea vines were everywhere flowering and gave no indication of recent frosts. Fuel of any description upon this township is a rare commodity. The nearest available supply being on township 40, range 24, west of the third meridian, where in a deep ravine a small poplar grove was discovered. No stone quarries occur upon this township. No minerals of economic value are known to occur upon this township. Several antelope were observed on this township and the surrounding locality; duck of various description were everywhere common upon the lakes and sloughs. Besides these several brant and sandhill cranes were noticed.—*J. W. Tyrrell, D.L.S., 1904.*

Township 43.—This township, which is situated about 55 miles due west from Battleford, can most directly be reached from that place by what is known as Sound-

ing lake trail, which passes through the country some miles to the south and which, though not travelled much of late years, is in good condition, and for the most part is through comparatively level country. Battleford is at present the most convenient supply station, also postal and telegraph office. The soil in this township is almost altogether drifting sand, and useless for farming purposes. It would be suitable for grazing. The surface, where not covered by Manito lake, is very rough and hilly, caused to a great extent by the shifting nature of the soil. There is practically no natural hay in this township, but a certain amount of swamp grass might be cut around the shores of Manito lake. White and black poplar from 1 to 10 inches in diameter and dogwood 3 to 8 inches are to be found in scattered clumps throughout this township, but generally speaking, the bush is very small and of a scrubby nature. Almost the entire township is taken up with Manito lake, a large alkaline body of water extending through several townships. Besides this, however, there is a small fresh water lake on the east boundary of section 7 and a few fresh water sloughs in various sections. There is no water power in this township. The weather was fine and cool while this township was being subdivided, but no frosts occurred. There is a considerable supply of poplar wood on most sections of this township, which would be ample as fuel for some years to come. There are no stone quarries upon this township. There are no minerals of economic value known to exist. A flock of about 75 large white swans were several times seen in Manito lake, besides duck of various kinds and a few brant geese. Rabbits, prairie chicken, a few partridge and the tracks of bear and deer were observed at different times.—*J. W. Tyrrell, D.L.S., 1904.*

Range 27.

Township 28.—This township may be reached by taking the Battleford and Medicine Hat trail from either place, which passes through township 28, range 25, and from which a good trail may be had. The surface is rolling and hilly, with a few ravines and small hay sloughs. The soil is clay and is better suited to grazing than agricultural purposes. The water is mostly alkaline. There are no minerals, quarries or water powers in the township. The only game seen in the township was antelope and duck.—*David Beatty, D.L.S., 1904.*

Township 29.—This township may be reached by taking the Battleford and Medicine Hat trail from either place, which passes through township 29, range 25, and from which a good trail can be had into the township. The surface of the country is rolling prairie, with small grassy or hay sloughs. The soil is hard clay and is better adapted to grazing than agricultural purposes. The water is mostly alkaline, but I found sufficient fresh water sloughs for camping purposes. There are no minerals, quarries or water powers in the township. The only game seen was antelope and duck.—*David Beatty, D.L.S., 1904.*

Township 30.—This township may be reached by taking the Battleford and Medicine Hat trail from either place, which passes through township 29, range 25, from which a good trail can be had. The surface is rolling, with a few ravines and scattered small hay marshes. The water is mostly alkaline. The soil is principally hard clay and is better suited for grazing than agricultural purposes. There are no minerals, quarries or water powers in the township. The only game I saw in the township was antelope and duck.—*David Beatty, D.L.S., 1904.*

Township 31.—There is a good trail from Medicine Hat to Battleford, via Red Deer forks, which passes through township 30, range 25, from which a route can be found through township 31, ranges 25 and 26 to this township. The soil is mostly a hard sandy loam with a hard clay subsoil, and is not suitable for agricultural purposes, being best adapted to forming a summer range for cattle. The surface is rolling prairie without any timber of any kind. There are no streams, quarries, minerals

or good hay marshes in this township. The water in the lakes is strongly alkaline and there is not any visible permanent supply of fresh water, the small sloughs that collect surface water in the spring being the only source of supply of water for camp purposes.—*Walter Beatty, D.L.S., 1904.*

Township 32.—There is a good trail from Medicine Hat to Battleford, via Red Deer forks which passes through township 31, range 24, from which a route can be found through township 31, ranges 25 and 26, to this township. The soil is mostly a very hard clay, but portions of it are sandy loam with a hard clay subsoil and is not well adapted to agricultural purposes, being more suitable for grazing land. A small percentage of it is stony on the surface. The surface is rolling prairie and not very broken excepting in the northwestern portion of the township, where there are low hills from 20 feet to 40 feet high. There are no streams, quarries, minerals or timber of any kind and no extensive areas of hay land in this township. The water in the lake on the south boundary of section 1 is alkaline, as is also the case in any large sloughs, the only fresh water being in small sloughs from which the surface water has not evaporated. I saw a few antelope in this township and some waterfowl.—*Walter Beatty, D.L.S., 1904.*

Township 33.—This township is open prairie very hilly and rough; class 3; soil sandy loam, gravelly and stony, particularly on the tops of the ridges and hills, the latter averaging about 60 to 100 feet in height. Small ponds and sloughs are of frequent occurrence among the hills, the ponds being alkaline and the sloughs having fresh water; in dry seasons fresh water would be scarce. Fairly good grazing is found in the valleys, but scant grass and poor grazing on the top of the hills. This township is not well adapted to cultivation and would only be fit for summer grazing. There are no hay marshes of any consequence, but hay could be cut around the sloughs in limited quantity. There is no wood, no mineral and no fixed rock. Wild duck and various waterfowl are found in abundance; antelope are about the only large game found, but are not plentiful. The most convenient route from this township is by the Sounding lake trail to Battleford, which passes northwesterly about twenty miles.—*G. C. Rainboth, D.L.S., 1904.*

Township 34.—This township is open prairie, very hilly and rough, class 3; soil, sandy loam, gravelly and stony, particularly on the tops of the ridges, the latter averaging about 60 to 100 feet high. Small ponds and sloughs are of frequent occurrence among the hills, the ponds having alkaline and the sloughs fresh water. In dry seasons water would be scarce. Fairly good grazing is found in the valleys, but scant grass and poor grazing on the tops of the hills. This township is not well adapted to cultivation and would only be fit for summer grazing. There are no hay marshes of any consequence, but hay could be cut around the sloughs in limited quantity. No wood, no mineral and no fixed rock is found. Wild duck and various waterfowl are found in abundance. Antelope are about the only large game found, but are not plentiful. The most convenient route from this township is by the Sounding lake trail to Battleford, which passes northwesterly about 12 miles.—*G. C. Rainboth, D.L.S., 1904.*

Township 35.—This township is open prairie, very hilly and rough; class 3; soil, sandy loam, gravelly and stony, particularly on the tops of the ridges and hills, the latter averaging about 60 to 100 feet high. Small ponds and sloughs are of frequent occurrence among the hills, the ponds having alkaline, and the sloughs fresh water. In dry seasons fresh water would be scarce. Fairly good grazing is found in the valleys, but scant grass and poor grazing on the tops of the hills. This township is not well adapted to cultivation and would only be fit for summer grazing. There are no hay marshes of any consequence, nevertheless hay could be cut around the sloughs in limited quantity. There is no wood, no minerals and no fixed rock. Wild duck and various waterfowl are found in abundance. Antelope are about the only large game found, but are not plentiful. The most convenient route from this township

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is by the Sounding lake trail to Battleford, which passes northwesterly about fifteen miles from this township. There is an old trail marked on the map going to Edmonton but it is now invisible.—*G. C. Rainboth, D.L.S., 1904.*

Township 36.—This township is open prairie, undulating and rolling in the north half and rolling and hilly in the south. Soil mostly 3rd class, more fitted for grazing than cultivation. Cactus lake extends into the township from the west and crosses sections 31, 32, 30 and 29, its water is alkaline, another small lake in which the water is similar to Cactus lake, crosses into the east side of the township from the east, entering sections 24 and 25. Surface water (fresh) is to be found in sloughs and marshes, which are of frequent occurrence. Several large hay marshes from which hundreds of tons of hay could be cut are found in the centre and southern portions of this township. No wood or timber of any kind nor fixed rock or mineral were found. Wild fowl are plentiful, antelope are also found; fur-bearing animals are muskrats and red foxes. The trail from Sounding lake to Battleford passes in township 37, range 28, and is the most convenient route to civilization.—*G. C. Rainboth, D.L.S., 1904.*

Township 37.—This township, distant about seventy or seventy-five miles southwest of Battleford, is most easily reached by what is known as Sounding lake trail, which though not used much during the past few years, runs through comparatively level country. At the present time Battleford is the most convenient supply station, also telegraph and post office. The soil in this township is chiefly sandy clay with a stiff clay subsoil, but towards the north of the township considerable light sandy soil with a clay subsoil is to be found, also in a few places sandy loam, but none of it can be considered as first class. It, however, produces a strong growth of grass and seems to be well suited for grazing and general farming. This township although quite hilly can hardly be called rough country, as the rating will show; however, towards the north a large ravine breaks the surface into a series of hills. The southern portion is more even and might be called a gradual descent from the north. There is no timber to be found upon this township; however, a few small willows occasionally are found growing around the shores of the lakes and sloughs. No very extensive hay meadows are to be found in this township, but in almost every section smaller ones occur. One of these on the east boundary of section 15, although more properly speaking a slough, would no doubt be dry enough to cut later in the season. The water in this township is mostly fresh, but the largest body, that in the northwest corner of section 32, is slightly alkaline. Small, but fine fresh water springs, are to be found in each of the ravines noted in sections 34 and 5. Fresh water sloughs are numerous. No water power exists upon this township. During the subdivision of this township the weather was fine and warm. The vines gave no indications whatever of having been touched by summer frosts. A warm rain was experienced on July 1. There is no fuel to be had upon this township. Probably the nearest available supply being in the northerly part of township 40, range 27, where the poplar bush commences. No stone quarries occur upon this township. No minerals of economic value appear in this township. The only game noticed in this township were a few antelope and duck.—*J. W. Tyrrell, D.L.S., 1904.*

Township 38.—This township, which is situated about seventy-five miles southwest of Battleford, is directly on what is known as Sounding lake trail. This trail has not been used much of late years, but runs through a comparatively level country. Battleford, which is the most convenient supply station at the present time, is also the nearest postal and telegraph office. The soil of this township, like those to the south and east, is mostly sandy clay, but here and there a considerable expanse of heavy clay soil appears, and also, especially along the south boundary, more or less loose sandy soil, stony in places. Most of the township, but more particularly the westerly portion, was covered with a very heavy rich growth of grass, and appeared

to be well suited for grazing or general farming purposes. This township might be described as hilly prairie, but in the neighbourhood of sections 16, 17 and 21 it is comparatively level, this apparently being the end of the large ravine mentioned in the township to the east. Natural hay meadows do not appear to be very plentiful in this township, but the large clay flats in sections 8 and 9 have a splendid growth of long swamp grass, different to that in the hay marshes, but no doubt equally as good for feeding purposes. The largest body of water is a fresh grassy lake, extending through considerable portions of sections 9, 10, 16 and 17, but other smaller ones appear in sections 18 and 30. These are permanent and would no doubt furnish a supply of water the year round. No water power exists in this township. The climate of this township during the early part of July was fine and moderate, no frosts occurring. The grass was still quite green, and had not begun to show much signs of turning brown. No fuel was to be found upon this township, the supply for camp purposes having to be procured from the northerly portion of township 40, range 27, where a few small poplar bluffs are located. Township 41, range 27, and those to the north of it, will furnish a considerable supply of poplar wood for some years. There are no stone quarries upon this township. No minerals appear in this township. Game was exceedingly scarce in this township, only a few duck being seen.—*J. W. Tyrrell, D.L.S., 1904.*

Township 39.—This township lies just to the north of what is known as Sounding lake trail, and is distant from Battleford in a southwesterly direction about seventy miles. This trail, although not used much of late years, is the best and most direct to this section of the country, passing as it does, through comparatively level prairie. Battleford, at the present time, is the most convenient supply station, also telegraph and post office. The soil in the easterly portion of this township is principally heavy clay, but varies from that to sandy clay with a clay subsoil. The southwesterly and northwesterly sections are very poor soil, the former being mixed with considerable gravel and the latter being drifting sand. Between these, however, viz., in sections 18, 19 and 30 the soil is good, being in the valley of Eyehill creek. The surface of this township is mostly open, rolling prairie, but varies from that to hilly country. No particular portion can be set aside as distinctly rough unless it may be the northwesterly sections where after crossing Eyehill creek, the sand hills are encountered. No timber is found upon this township, but along Eyehill creek poplar scrub and willows are found growing in clumps. Natural hay meadows, though small, occur in many sections of this township. Probably the most important of these is found in the east boundary of section 23. There are no lakes in this township, but numerous sloughs. These sloughs, however, are small and most of them become dry towards the end of the summer. A fine fresh spring is to be found on the south boundary of section 6, which, though small at the present time, could be greatly improved. Eyehill creek, which flows through sections 7, 18, 19, 30 and 32 is alkaline and though probably quite a stream at some seasons, was almost dry during the summer. No water power exists upon the township. While this township was being subdivided the weather was dry and warmer than at any previous time during the season. No rain fell and summer frosts were never experienced. There is very little fuel upon this township, the only wood being some small poplar, above mentioned, along Eyehill creek. The nearest available supply is in township 40, range 27, west of the third meridian, where some small poplar bluffs occur. From there northerly, however, in township 41, range 27, the supply is sufficient for some years to come. No stone quarries occur upon this township. No minerals are known to occur upon this township. A few ducks and a number of prairie chickens were all the specimens of game seen in this township.—*J. W. Tyrrell, D.L.S., 1904.*

Township 40.—This township is situated in a southwesterly direction from Battleford about 65 or 70 miles and some distance to the north of what is known as

Sounding lake trail. This trail is in good condition and passes through comparatively level country. Battleford is at the present time the most convenient supply station, as well as telegraph and post office. Eyehill creek seems to be the dividing line in this township between two distinct classes of soil, that to the west being principally drifting sand and not very suitable for either grazing or farming purposes. To the east of the creek however, it is somewhat better there being considerable areas of sandy clay soil with a clay subsoil, and producing a fair growth of grass. This easterly portion would be more suitable for grazing than general farming purposes. This is decidedly a hilly country, there being no areas of any extent which are at all level. That portion along the east boundaries of sections 4, 9, 16 and 21 is probably the roughest, caused by numerous deep ravines entering Eyehill valley. Much of the westerly portion being sandhills is also very rough. There are a few scattered clumps of small poplar in sections 4, 5 and 34, also clumps of willow growing along Eyehill creek. There are many acres of natural hay growing on either side of Eyehill creek, in fact sections 28, 21, 16 and parts of 9 and 4 through which it runs, may be considered as one large hay meadow. There are other small marshes scattered throughout the township. Eyehill creek, the most important water in this township, is a slightly alkaline creek, running through the centre from south to north. It was practically dry in July, but is surrounded by a large muskeg, which as it narrows down towards the north furnishes a considerable flow of fresh water. It will average about 15 feet wide, 12 to 18 inches deep and flows about one to one and one-half miles per hour. There is also quite a large alkaline lake in section 19 and some small fresh water ones in sections 14, 22 and 26. No water power exists in this township. The weather during the subdivision of this township was moderately warm and entirely free from summer frosts. There is very little fuel to be had upon this township, some small poplar only being found in sections 4, 5 and 34, but in township 41, range 27 and those to the north, there is a considerable supply of poplar wood available for some years to come. There are no stone quarries. There are no minerals known to exist. Duck, rabbits and a few prairie chicken were seen.—*J. W. Tyrrell, D.L.S., 1904.*

Township 41.—This township, which is situated about 65 miles west of Battleford is most directly reached from that place by what is known as Sounding lake trail, which passes some miles to the south of it. This trail is in good condition and runs for the most part through comparatively level country. Battleford, at the junction of the Battle and Saskatchewan rivers, is at present the most convenient supply station, postal and telegraph office. The soil of this township is almost altogether loose sand and in many places drifting. East of Eyehill creek, however, it is somewhat a better class, being mostly sandy clay with a clay subsoil. There is a considerable growth of grass in this township, which would be suitable for grazing purposes. This township, principally owing to the sand hills, is very rough, there being no level areas of any extent. Almost every section in this township has some poplar upon it, but in no case are there any extensive areas of large bush. The trees vary in size, from 1 to 8 inches and are both black and white poplar. There are no distinctive hay marshes in the township, but around the shores of some of the lakes, considerable hay might be cut. The largest body of water in the township is an alkaline lake, extending through sections 29, 32 and 33, but besides this, there are several other lakes, most of which are alkaline. Eyehill creek is the most important water, it being fresh in this township and of considerable volume. It varies from ten to twenty-five feet in width, is about twelve to eighteen inches deep and flows about one and one-half miles per hour. There is no water power in this township. No summer frosts were experienced during the subdivision, the weather being fine and moderately warm. Rain fell on August 2. There is a considerable supply of poplar wood to be had on almost every section. There are no stone quarries; and no minerals are known to exist.

Duck, brant geese, prairie chicken, rabbits and jumping deer were seen.—*J. W. Tyrrell, D.L.S., 1904.*

Township 42.—This township is situated almost due west of Battleford, about sixty miles, and can most easily and directly be reached by the old Sounding lake trail, which passes some miles to the south in township 38. This trail is in good condition and runs through comparatively level country, but has not been used much for some years. Battleford is at the present time the most convenient supply station, also telegraph and post office. The soil of this township is light drifting sand and would be useless for agricultural purposes. It might be used as grazing land or as a game preserve. The surface of this township is very rough, being a series of lakes and hills. Black and white poplar from one inch to ten inches is to be found in many sections, also some small white birch was noticed in section 27, however, there are no extensive areas of large timber. There are no natural hay marshes in this township, but a considerable quantity might be cut around the shores of some of the lakes and sloughs. There is a great abundance of water in every section of this township. Large lakes and extensive marshes, or muskegs, filled with willow bushes are to be found on every hand, and contain an abundant supply of fine fresh water. There is no water power in this township. The weather during the subdivision of this township was fine, dry and moderately warm, and entirely free from summer frosts. There is considerable supply of poplar wood on almost every section, which would meet the demand for fuel for some years to come. There are no stone quarries upon this township. There are no minerals known to exist upon this township. Duck, brant geese, rabbits, prairie chicken and jumping deer were seen in this township. The deer, while not numerous, were seen from time to time.—*J. W. Tyrrell, D.L.S., 1904.*

Township 43.—This township is about sixty miles due west of Battleford and can most easily and directly be reached by the old Sounding lake trail, which lies some distance to the south. This trail, though not used much for some years, is in good condition and passes through a comparatively level country. Battleford is at the present time the most convenient supply station, also telegraph and post office. The soil in this township is altogether sand, with frequent large areas of drifting sand. It would be useless for any class of farming, but might be used for grazing or as a game preserve. The surface of this township is very rough, the hills not being very high, but numerous. A sandhill country most fully describes this township. Almost every section upon this township, with the exception of those at the extreme north, and that portion occupied by Manito lake, has more or less bush upon it. This bush is black and white poplar varying from one inch to ten inches, with an occasional small tree of white birch, but these latter are not numerous. The most extensive area of bush is probably that to the south of Manito lake in sections 10 and 11. The largest and probably the only hay marsh in this township is to be found at the westerly extremity of Manito lake in sections 9, 10, 15 and 16. The largest body of water in this township is Manito lake, which occupies all of sections 19, 30 and 31 and the greater part of 18, 13, 14 and 10, besides extending into the townships to the east. This is strongly alkaline. Fresh water sloughs occur in various sections, and small fresh water springs or creeks appear on the east boundaries of sections 16, 3 and 14. There is no water power in this township. There were no summer frosts experienced in this township and the weather was fine and moderately warm. It was noticed that the sandhills were usually wooded on the north and northeast sides, but it is difficult to say whether or not this is caused by climatic conditions. There is a considerable supply of poplar wood to be found in almost every part of this township. It is more scattered towards the north, but even there, poplar bluffs are numerous. There are no stone quarries in this township. There are no minerals known to exist in this township. Many varieties of water fowl, including duck, geese and swans were seen in this township. A flock of about seventy-five of the latter were seen several times in Manito

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lake. Prairie chicken, rabbits, a few partridge, deer, and one black bear were also seen at different times.—*J. W. Tyrrell, D.L.S., 1904.*

Range 28.

Township 27.—This township may be reached by taking the Battleford and Medicine Hat trail from either place, which passes through the southeastern part of the township. The surface of the country is very rolling and hilly, with ridges and ravines in places, with small hay swamps. The soil is mostly sandy, in some places very hard. The township is more suitable for grazing than agricultural purposes. There are several lakes in the township, the water of which is strongly alkaline. There is a spring of good fresh water near the northwest corner of section 5, and there are several springs on sections 30 and 31. There are no minerals, quarries or water falls in the township. There were antelope and duck in the township, also several hundred range cattle.—*David Beatty, D.L.S., 1904.*

Township 28.—This township may be reached by taking the Battleford and Medicine Hat trail from either place, which passes township 27, range 28, from which a good trail can be had. The surface of the country is rolling prairie, with scattered hay sloughs. There is a lake on sections 4 and 5, the water of which is strongly alkaline. Most of the sloughs are also alkaline. I found sufficient fresh water for camping purposes. The soil is mostly clay and is hard, requiring picks to dig the pits. The township is more suitable for grazing than agricultural purposes. There are no minerals, quarries or water powers in the township. The only game seen was antelope and duck.—*David Beatty, D.L.S., 1904.*

Township 29.—This township can be reached by taking the Battleford and Medicine Hat trail from either place, which passes through the southeastern part of township 27, range 28, from which a good trail may be had into the township. The surface of the country is rolling prairie. The soil is generally clay, but too stiff to be good farming land, and is more suitable for grazing than agricultural purposes. There are two lakes of considerable size in the township, the waters of which are strongly alkaline. Some of the smaller sloughs scattered through the township contain fresh water. There are no minerals or quarries in the township. The only game I saw in the township were antelope and duck.—*David Beatty, D.L.S., 1904.*

Township 30.—This township may be reached by taking the Battleford and Medicine Hat trail from either place, which passes through township 30, range 24, from which a good trail can be had. The surface of the country is slightly rolling prairie, with some small hay sloughs. There are several lakes in the township, the water of which is strongly alkaline. The soil is generally hard clay and is more suitable for grazing than agricultural purposes. There are no minerals, quarries, or water powers in the township. The only game seen was antelope and duck.—*David Beatty, D.L.S., 1904.*

Township 31.—The readiest means of access to this township is by rail to Battleford thence by Battleford and Medicine Hat trail, as now travelled, to township 31, range 24, thence westerly across ranges 25, 26 and 27. The surface is broken, rolling prairie, rough and hilly in the northwesterly portion. There are six small lakes. The water is mostly brackish; the water in sloughs is generally sweet. The soil is generally hard sand or gravel with clay subsoil—not suitable for tillage, but fairly good grazing land. There are no minerals, quarries or water powers in the township. Antelope and duck were the only game seen.—*Walter Beatty, D.L.S., 1904.*

Township 32.—This township may be reached by taking the Battleford and Medicine Hat trail from either place, which passes through township 32, range 24, from which a good trail can be had into the township. The surface of the country is rolling prairie with scattered small hay sloughs. There are several lakes in the township

the water of which is strongly alkaline, although I found sufficient fresh-water sloughs for camping purposes. The soil is generally hard clay and is better adapted for grazing than agricultural purposes. There are no minerals, quarries or water powers in the township. The only game seen was antelope and duck.—*Walter Beatty, D.L.S., 1904.*

Township 33.—This township is open prairie, very hilly and rough, class 3, soil sandy loam, gravelly and stony, particularly on the top of the ridges and hills, the latter averaging about 60 to 100 feet high. Small ponds and sloughs are of frequent occurrence among the hills, the ponds having alkaline and the sloughs fresh water. In dry seasons fresh water would be scarce. Fairly good grazing is found in the valleys, but scant grass and poor grazing on the tops of the hills. This township is not well adapted to cultivation, and would only be fit for summer grazing. No hay marshes of any consequence were noticed, nevertheless hay could be cut around the sloughs in limited quantity. There is no wood, no mineral and no fixed rock. Wild duck and various waterfowl are found in abundance. Antelope is about the only large game found, but are not plentiful. The most convenient route from this township is by the Sounding lake trail to Battleford, which passes northwesterly about twenty-two miles.—*G. C. Rainboth, D.L.S., 1904.*

Township 34.—This township is open prairie, very hilly and rough, rating class 3, soil is sandy loam, gravelly and stony, particularly on the tops of the ridges and hills, the latter averaging about 60 to 100 feet high. Small ponds and sloughs are of frequent occurrence among the hills, the ponds have alkaline and the sloughs fresh water. In dry seasons fresh water would be scarce. Fairly good grazing is found in the valleys, but scant grass and poor grazing on the tops of the hills. This township is not well adapted to cultivation, but would be fit for summer grazing. There are no hay marshes of any consequence, but hay could be cut around the sloughs in limited quantity. There is no wood, no mineral and no fixed rock. Wild ducks and various other waterfowl are found in abundance. Antelope is about the only large game found, but are not plentiful. The most convenient route from this township is by the Sounding lake trail to Battleford, which passes northwesterly about 16 miles.—*G. C. Rainboth, D.L.S., 1904.*

Township 43.—This township is situated due west of Battleford about sixty-five miles, and some distance to the north of what is known as Sounding lake trail, which is the best and most direct route to that section of the country. It has not been used much during the past few years, but is in first-class condition, and lies through a comparatively level country. The town of Battleford at the junction of Battle and Saskatchewan rivers, is the most convenient supply station. It is also a telegraph and post office. The sections to the north of this township are very suitable for general farming or grazing purposes, being heavy sandy loam from four to ten inches deep, with a sandy subsoil. Towards the south, however, it is almost altogether drifting sand, and sandhills, and of little use for agricultural purposes. The surface of this township is most unusual, having the appearance of a large artificial park. Everywhere are round dense clumps of young poplar and willow, with what appears to be driveways winding in and out between them. The western portion is also very hilly, but towards the east in sections 23, 24, 25 and 26 there is a gently rolling valley. There is very little natural hay to be found in this township. A small quantity might be cut on the east boundary of section 10 near the half-mile pits. There is an abundance of water in this township. The large bodies are saline, but many small fresh water sloughs are to be found. These are usually full of thick willows, which keep the water cool and splendid for drinking purposes in summer. The large saline lake in sections 1, 2, 11 and 12 has a firm sandy bottom and is all that could be desired for bathing purposes. During the subdivision of this township the weather was cool, but no summer frosts occurred. Rain fell during August 19.

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There is considerable poplar wood on almost every section, which, though mostly small, is sufficient as a fuel supply for some years to come. The bush on this township is composed of black and white poplar and some small white birch. The latter is to be found on the shore of the alkaline lake in section 15. The poplar is, generally speaking, small, but a few trees eight to ten inches in diameter are growing around the shores of the large saline lake. There are no stone quarries in this township. There are no minerals known to exist upon this township. Game is quite plentiful in this township. Various kinds of waterfowl, namely, duck, brant geese and snipe were seen, also rabbits, partridge, prairie chicken, sandhill crane and several jumping deer. Bear tracks were often observed, but none of these animals were actually seen.—*J. W. Tyrrell, D.L.S., 1904.*

Range 29.

Township 27.—This township may be reached by taking the Battleford and Medicine Hat trail, which passes through the southeast corner of township 27, range 28, from which a good trail can be had. The surface is rolling, with some small hay sloughs. The water is mostly alkaline, but there is fresh water on section 25 at the southwest angle of a lake where the ground is boggy with springs. The northern portion of the township is sandy and the southern part clay. The country is better adapted for grazing than agricultural purposes. There are no minerals, quarries, or water powers in the township. The only game seen were antelope and duck.—*Walter Beatty, D.L.S., 1904.*

Township 28.—This township may be reached by taking the Battleford and Medicine Hat trail from either place, which passes through the southeast corner of township 27, range 28, from which a good trail can be had. The surface of the country is rolling, with a few small hay sloughs. The northern part of the township is sandy and the southern part is clay. The water is mostly alkaline. There is a small spring of fresh water in section 24 near the west side. The country is more suitable for grazing than agricultural purposes. There are no minerals, quarries or water powers in the township. The only game seen was antelope and duck.—*Walter Beatty, D.L.S., 1904.*

Township 29.—This township may be reached from either Battleford or Medicine Hat by the trail which passes through township 29, range 25, from thence a fair trail may be had across ranges 26, 27 and 28. The surface is mainly rolling prairie, with a few broken hills and grassy sloughs. The sloughs and hay swamps afford fresh water for camp use. The soil is principally clay of fair quality, but it is better adapted for grazing than tillage. There are no minerals, quarries or water powers. Antelope and duck are the only game.—*Walter Beatty, D.L.S., 1904.*

Township 30.—This township may be reached by taking the Battleford and Medicine Hat trail from either place. This trail passes through range 25 and from there an easy route may be had across ranges 26, 27 and 28. The surface is rolling prairie broken by occasional hay swamps or sloughs, in which good water may be found. On section 26 is a small alkaline lake. The soil is mostly all hard clay and unfit for agricultural purposes, but is fairly good for grazing. There are no minerals, quarries or water powers in the township. Antelope and duck are the only game.—*Walter Beatty, D.L.S., 1904.*

Township 31.—This township may be most readily reached by taking the Battleford and Medicine Hat trail from Battleford to a point opposite. Then an easy route may be had over the prairie westward across township 31, ranges 25, 26, 27 and 28. The surface of the country is rolling prairie, with occasional small hay sloughs with fresh water. The soil is generally either hard clay or sand with small tracts of sandy loam. There are no minerals, quarries or water power in the township. Antelope and duck are the only game.—*Walter Beatty, D.L.S., 1904.*

Township 32.—This township may be reached by taking the Battleford and Medicine Hat trail, from which a good trail may be had westward into the township. The northerly part of the township is gently rolling prairie. The southerly half is rougher. Fresh water for camping purposes may be obtained in the sloughs. The soil is sandy with sandy loam and clay in places and better adapted for grazing than farming purposes. There are no minerals, quarries or water powers in the township. Antelope and duck were the only game seen.—*Walter Beatty, D.L.S., 1904.*

Township 33.—This township is open prairie, rolling and hilly, class 3, soil sandy loam, gravelly and stony on the tops of the hills and ridges. A few scattered ponds and sloughs are met with, the ponds alkaline and the slough water fresh and fit for use. This township, while not very favourable for cultivation, is nevertheless well suited for ranching, as the grasses are abundant and rich. No wood of any kind is met with. No solid rock or mineral was noticed. The usual waterfowl are plentiful but large game is scarce, antelope being the only kind found. The most convenient outlet for this township is by the Sounding lake trail to Battleford passing through Tp. 37, R. 29, W. of the 3rd meridian.—*G. C. Rainboth, D.L.S., 1904.*

Township 34.—This township is open prairie, rolling and hilly, class 3, with sandy loam soil, gravelly and stony on the tops of the hills and ridges. A few scattered ponds and sloughs are met with, the ponds being alkaline, but slough-water fresh and fit for use. This township, while not being favourable for cultivation, is nevertheless well suited for ranching, as the grasses are abundant and rich. No wood of any kind is met with, and no solid rock or mineral. The usual waterfowl are plentiful but large game is scarce, antelope being the only kind found. The most convenient outlet for this township is by the Sounding lake trail to Battleford passing through Tp. 37, R. 29, west of the 3rd meridian.—*G. C. Rainboth, D.L.S., 1904.*

TOWNSHIPS WEST OF THE FOURTH MERIDIAN.

Range 1.

Township 33.—This township is open prairie, very hilly and rough; about class 3; soil sandy loam, gravelly and stony, particularly on the tops of the ridges and hills, the latter averaging about 60 to 100 feet high. Small ponds and sloughs are of frequent occurrence among the hills, the ponds having alkaline and the sloughs fresh water. In dry seasons fresh water would be scarce. Fairly good grazing is found in the valleys, but scant grass and poor grazing on the tops of the hills. This township is not well adapted to cultivation and would only be fit for summer grazing. There are no hay marshes of any consequence, nevertheless, hay could be cut around the sloughs in limited quantity. There is no wood, no mineral and no fixed rock. Wild duck and various waterfowl are found in abundance. Antelope is about the only large game found, but are not plentiful. The most convenient route from this township is by the Sounding lake trail to Battleford, which passes northwesterly about eighteen miles.—*G. C. Rainboth, D.L.S., 1904.*

Township 34.—This township is open prairie, very hilly and rough, rating class 3. Soil is sandy loam, gravelly and stony particularly on the top of the ridges and hills, the latter averaging about 60 to 100 feet high. Small ponds and sloughs are of frequent occurrence among the hills, the ponds having alkaline and the sloughs fresh water. In dry seasons fresh water would be scarce. Fairly good grazing is found in the valleys, but scrub grass and poor grazing on the tops of the hills. This township is not well adapted to cultivation and would only be fit for summer grazing. There are no hay marshes of any consequence, nevertheless hay could be cut around the sloughs in limited quantity. There is no wood, no mineral and no fixed rock. Wild duck and various waterfowl are found in abundance. Antelope is about the only large game found, but they are not plentiful. The most convenient route from

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this township is by the Sounding lake trail to Battleford, which passes northwesterly about 12 miles.—*G. C. Rainboth, D.L.S., 1904.*

Township 35.—This township is open prairie, very hilly and rough, class 3; soil sandy loam, but gravelly and stony, particularly on the top of the ridges and hills, the latter averaging about 60 to 100 feet high. Small ponds and sloughs are of frequent occurrence, the ponds being alkaline, but the sloughs having fresh water. In dry seasons fresh water would be scarce. Fairly good grazing is found in the valleys, but scant grass and poor grazing on the tops of the hills. This township is not well adapted to cultivation and would only be fit for summer grazing. There are no hay marshes of any consequence, nevertheless, hay could be cut around the sloughs in limited quantity. There is no wood, no rock and no minerals. Wild duck and various waterfowl are found in abundance. Antelope are about the only large game found, but are not plentiful. The most convenient route from this township is by the Sounding lake trail to Battleford, which passes northwesterly about 6 miles.—*G. C. Rainboth, D.L.S., 1904.*

Township 36.—This township is open prairie, undulating and rolling in the northeast quarter. Rolling in the northwest quarter and middle parts and extremely hilly in the southern part, class 2 and 3. Soil is sandy loam, with clay and gravelly subsoils. In the northwest corner of this township there is a range of small sandhills, with a few small poplar bluffs extending across sections 31 and 32. Two lakes were traversed, one in section 28, and the other mostly in section 15, but extending into sections 10 and 16. The water in these lakes is alkaline. Good fresh water sloughs are found in the hilly parts. This township is fairly well adapted to cultivation, but is best suited for grazing. There is no timber or wood, except as before mentioned in sections 31 and 32. No fixed rock or minerals were seen. Waterfowl as usual are abundant; muskrats are found in all ponds and sloughs, a few antelope are occasionally seen. The Sounding lake trail to Battleford crosses the northwest corner of the township, and is at present the shortest way to civilization.—*G. C. Rainboth, D.L.S., 1904.*

Township 54.—The most convenient and economical manner of reaching this township during the summer is by way of Edmonton and Saskatchewan river to Onion Lake landing, situated in section 8. From this point a trail leads northeast to the northeast corner of the township and joins one running east and west near the north boundary, making the whole township easily accessible. The soil is clay loam on the west side and sandy loam on the east side of the township and varies between these varieties. That portion around the Indian reserve and along the north bank of the Saskatchewan river would be suitable for mixed farming, but the whole of the township is admirably adapted for cattle or sheep ranching. Along the south side of the Saskatchewan the land is heavily timbered for from one-half to three-fourths of a mile back from the river with considerable poplar timber, three to eighteen inches in diameter and heavy willow brush, and is generally very rough and broken. On the north bank the timber is more scattered and extends from one-quarter to one-third of a mile back from the river and consists of poplar and cottonwood about five to one, varying from three to twenty-four inches in diameter and considerable willow and rose brush. Back from the river the surface is rolling with many groves of poplar and willow brush with occasional patches of poplar timber ranging from three to fourteen inches in diameter, which would be suitable for fuel. The only timber in the township is along the river and ranges from three to twenty-four inches in diameter and is composed of poplar and cottonwood about five to one. The supply would not be more than would be required by settlers on the respective sections. Hay was cut over all that portion of the township lying to the north of the river and to the east of the two Big hills last season and appears to be first class and would average one to two tons to the acre, depending upon whether it were low or high land hay, and also upon the season.

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Saskatchewan river is the main source of water and was used by my party during the months of June, July and August, and although slightly brackish, is fair. The river is from twenty-one to thirty-two chains in width, three to six feet in depth, current two to three miles per hour, volume constantly changing. The land along the banks is liable to be flooded during the spring floods. The supply is permanent. There are no water powers available in the township. The climate during the past season was exceedingly fine, a few slight showers fell during the summer, just sufficient for crops, and cold weather set in about November 20, but no snow fell to speak of until after Christmas. The fuel most readily available is wood (poplar). Dry poplar may be procured almost any place on the south bank of the river, while green wood may be procured on either bank and in many places on the interior of the township. Drift limestone was the only economic mineral observed and that was found in considerable quantities along the river. Drift boulders were also observed throughout the township. Rabbits, muskrat, prairie chicken and grouse are plentiful. Duck were numerous during the fall, geese scarce; a few sandhill crane were seen. Indications of bear and deer were observed on the south side of the river. Wolves and foxes were quite numerous. One squatter was found in this township in section 8 on the bank of the river. He has about ten acres cleared and fenced, and besides his vegetable garden, had a nice field of barley and one of oats, about three and one half acres in each.—*Adam Fawcett, D.L.S., 1904.*

Township 55.—The most convenient and economical manner of reaching this township during the summer season is by way of Edmonton and Saskatchewan river, landing at Onion Lake landing. A good trail leads directly to this township, which is distant about seven miles, while from Edmonton to the landing would be about two hundred and seventy miles. The river is navigable for rowboats during the entire season, and for scows up to August 15 or September 1, and some seasons later, depending entirely upon the kind of season. The soil varies from a hard clay loam mixed with stones in the north part of the township, to a sandy loam in the south portion. Portions of the south half are well adapted for mixed farming, and on the whole I would say the township was well adapted for cattle or sheep ranching. The north half of the township is covered with a heavy growth of poplar and spruce timber in the ratio of about five to one. Some very fine spruce and a few tamarac being observed on the west side of the township; on the south half are many poplar groves with willow, with patches of prairie between, but very little timber of use except for firewood. The best spruce was observed on the west side of the township and would range from four inches to twenty inches in diameter; the poplar would range in size from three inches to sixteen inches, and exists in large quantities all along the north half of the township. The Northwest Mounted Police cut hay on sections 9 and 16, but the area that can be cut depends largely on the season, whether wet or dry. During the past season the area in the above sections would be about three hundred acres. Hay could also be cut in sections 1, 2, 3, 4, 10, 11 and 12. The water is generally slightly alkaline, although many sloughs of fresh water were found, and I think the supply in this township quite adequate for its needs and would probably be permanent. Tullibee creek is the only stream of consequence and some seasons is said to run dry, although during the past season it ran from eight inches to twelve inches deep and from ten to twenty links wide. I do not think the land is liable to be flooded to any extent, excepting perhaps along the south boundary, when during a wet season it might flood two to two and one-half feet more than during the past season—to cover perhaps eight hundred or one thousand acres. There are no available water powers in this township. The climate during the past season was unexcelled for surveying operations. Rain fell on about five days during the entire summer and snow did not fall to any depth until after Christmas. There were no summer frosts. The fuel most readily available is poplar wood and can be procured anywhere in the north half of

the township. There were no stone quarries. Limestone was the only economic mineral observed, and that only drift boulders. No coal has been found in the township. Rabbits, muskrat, prairie chicken and grouse are very plentiful. Duck are numerous in season, geese scarce. Many indications of moose and jumping deer were seen. Wolves, foxes and bobcats are quite numerous. There are several squatters, but little land is cultivated beyond a few vegetables, as the owners go in for cattle raising almost exclusively and drive them to pasture in the favourable districts. The main trail Edmonton to Battleford passes through the south end of the township. The southeast corner of the township is about half a mile west of Onion Lake post office.—*Adam Fawcett, D.L.S., 1904.*

Range 2.

Township 33.—This township is open prairie, the eastern half being high, rolling and hilly, classes 2 and 3; soil sandy loam with clay, sandy and gravelly subsoil. There are a few ponds and sloughs in the southwestern part of the township, but water is scarce in the other parts. The western part only is fit for cultivation, as the eastern part is too rough and would only do for grazing purposes. There are no hay marshes of any consequence. Antelope were occasionally seen. No wood, rock or minerals were seen. Sounding creek flows northerly through section 6. The most convenient route from this township is by the Sounding lake trail, but it would have to be reached across the prairie.—*G. C. Rainboth, D.L.S., 1904.*

Township 34.—This township is open prairie, very hilly and rough, class 3, soil sandy loam, gravelly and stony, particularly on the tops of the ridges and hills, the latter averaging about 60 to 100 feet high. Small ponds and sloughs are of frequent occurrence among the hills; the ponds having alkaline and sloughs fresh water. In dry seasons fresh water would be scarce. Fairly good grazing is found in the valleys, but scant grass and poor grazing on the top of the hills. This township is not well adapted to cultivation, and would only be fit for summer grazing. There are no hay marshes of any consequence, nevertheless hay could be cut around the sloughs in limited quantity. No wood, no mineral and no fixed rock was found. Wild duck and various waterfowl are found in abundance. Antelope is about the only large game found, but are not plentiful. The most convenient route from this township is by the Sounding lake trail to Battleford, which passes northwesterly about twelve miles.—*G. C. Rainboth, D.L.S., 1904.*

Township 35.—This township is open prairie, very rough and hilly, class 3; soil sandy loam, gravelly and stony, particularly on the tops of the ridges and hills, the latter averaging about 60 to 100 feet high. Small ponds and sloughs are of frequent occurrence among the hills, the ponds containing alkaline and the sloughs fresh water. In dry seasons fresh water would be scarce. Fairly good grazing is found in the valleys, but scant grass and poor grazing on the tops of the hills. This township is not well adapted to cultivation, and would only be fit for summer grazing. There are no hay marshes of any consequence, nevertheless, hay could be cut around the sloughs in limited quantity. There is no wood, no mineral and no fixed rock. Wild duck and various waterfowl are found in abundance. Antelope is about the only large game found, but are not plentiful. The most convenient route from this township is by the Sounding lake trail to Battleford, which passes northwesterly about 12 miles.—*G. C. Rainboth, D.L.S., 1904.*

Township 36.—This township is open prairie, excepting a few small bluffs of poplar in the northeast quarter of section 36. It is mostly class 3; soil sandy, with sandy and gravelly subsoil. The northern tier of sections are undulating except sections 35 and 36, which are hilly and rolling. The rest of the township is hilly, being extremely so in the southwestern part. It is a fairly good grazing coun-

try, but with the exception of the undulating portion is unfit for cultivation. Two small alkaline lakes were traversed. There is no other wood except what is mentioned in section 36. No rock exposures or minerals were seen. Water is plentiful in the hilly parts in small grassy sloughs. The trail from Sounding lake to Battleford crosses the northern part of this township, and is the shortest route at present to civilization. Wild fowl are plentiful about all sloughs and ponds, antelope are still to be found and muskrats are found wherever there is water.—*G. C. Rainboth, D.L.S., 1904.*

Township 54.—The most convenient and economical manner of reaching this township during the season of open water is by way of Edmonton and Saskatchewan river. The river is navigable for small boats during the entire season of open water and until August 15 to September 1 or 15, depending upon the season, for scows. The distance from Edmonton would be about two hundred and eighty, or two hundred and ninety miles to the township. To reach the interior of that portion of the township lying south of the river, however, a trail leads from the south shore opposite Onion Lake landing in section 8, township 54, range 1, to the centre of the township. The soil in the north and south portions of the township is sand and sandy loam, while that of the interior is clay, and in many places mixed with sand. A number of places in the south half of this township are well adapted for mixed farming, but they are scattered, that is, there is no large amount lying contiguous; while along the river and on its north side the broken surface renders it more suitable for cattle or sheep ranching. That portion lying along the river is the only part that is heavily timbered and extends from one-quarter to three-quarters of a mile on either side. The balance of the township is a rolling broken surface with numerous groves of willow and poplar and many sloughs. The timber in this township is chiefly on the banks of the Saskatchewan, which are very rough and broken, and consist of poplar, cottonwood and spruce in the proportion 6, 3, 1, the poplar averaging two to ten inches in diameter; cottonwood four to twenty inches in diameter; spruce four to fourteen inches in diameter. In the south part of the township are some very fine hay lands, which would probably run four thousand five hundred to six thousand acres in extent on which hay might be profitably cut, lying chiefly in sections 3, 4, 5, 6, 7, 8, 9, 10, 15, 16, 21 and 22, and would average one to three and one-half tons per acre and is apparently first-class prairie hay. The main water supply is Saskatchewan river, which varies from twenty to twenty-eight chains in width, three to six feet deep, with a current of from two and one-quarter to three miles per hour. The land along the banks is liable to be flooded during the spring break-up from two to four feet deep. The only other stream of note is that emptying into Saskatchewan river through section 34, but this creek is said to cease running in a dry season. There are no water powers to be developed in the township. The climate during the past season was unexcelled for survey operations. Rain fell on only some five or six days (and then not excessively) during the entire season, and snow did not fall to any depth until after Christmas, and until the middle of November the frost was not severe. There were no summer frosts to speak of. The fuel most readily available is poplar, and may be procured any place along the river and in a few places along the correction line. There were no traces of coal in place, observed in the township. There were no stone quarries observed. Limestone was the only economic mineral seen and that only drift boulders. Rabbits, muskrat, chicken and grouse are numerous. Duck are plentiful in the fall, geese scarce; several red deer were seen. Wolves, foxes and lynx are quite numerous and traces of bear were observed along the river.—*Adam Fawcett, D.L.S., 1904.*

Township 55.—The most convenient and economical manner of reaching this township is by way of Edmonton and Saskatchewan river to Onion Lake landing on section 8, township 54, range 1, west of the fourth meridian. From this point a trail

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leads northward to the main Edmonton-Battleford trail, which passes through the township and is generally in fair condition. The river is navigable for row boats during the entire open season and for scows until August 15 to September 1, depending upon the fall rains. Onion Lake post office, situated on the Edmonton-Battleford trail, lies some seven miles to the east of the east boundary of the township. At this point there is also a government telegraph station, a Hudson's Bay Company store, Indian agency and a Roman Catholic and Anglican mission schools. The soil is almost all hard clay with clay and stone subsoil, the exception being along the south boundary comprising sections 1, 2, 3, 4, and the southern portion of sections 23 and 24, which are sandy loam and sand, and a large muskeg covering portions of sections 23, 24, 25 and 26. This township is probably best adapted for cattle or sheep ranching on account of the character of its soil and its very broken and rolling surface. The surface of the entire township is very rolling and broken with numerous sloughs and several deep ravines. The south half is prairie, with numerous groves of willow and poplar brush and occasional bluffs of larger poplar ranging from three to twelve inches in diameter, but generally short, and many sloughs and ponds. The north half is very broken with low rolling hills and numerous sloughs and ponds and generally heavily timbered with poplar, spruce and a few tamarac and an occasional pine. The poplar timber would average three to sixteen inches in diameter and is found over the whole of the north half of the township. Spruce is scattered over the two northern tiers of sections and would average four to twenty inches in diameter. The proportion would be poplar six to one of spruce. The tamarac and pine do not exist in any quantity and are found along the east boundaries of 35 and 26. There were no hay lands of any account observed in the township. In the northern portion of this township there are a large number of fresh water sloughs and ponds, but the larger sloughs and lakes are slightly alkaline. The only stream of note is the outlet to Stony lake and this was found to be almost dry until it reached section 10, when it is seven to one hundred and ten links in width and from eight to twelve inches deep. The water is slightly alkaline. There is no land liable to be flooded to any extent noticed in the township. There are no water powers available for development in this township. The climate was exceedingly fine during the past season; very slight rains occurred at intervals during the summer, with no frost or snow of account until after the middle of November and no summer frosts to speak of. The fuel most readily available is poplar wood and may be cut almost any place throughout the township, while there are considerable quantities of dry spruce, poplar and tamarac around the muskeg in sections 25, 26, 35 and 36. There were no economic minerals observed in the township. Rabbits, muskrats, chicken and grouse abound throughout the township, duck are plentiful during the fall, geese scarce, moose and deer seemed to be quite plentiful from the indications, and traces of bear were observed. Wolves and foxes are quite numerous, and a few lynx or bobcats.—*Adam Fawcett. D.L.S., 1904.*

Range 3.

Township 54.—The most convenient and economical manner of reaching this township during the season of open water is by way of Edmonton and Saskatchewan river, which flows through the eastern portion of the township. The distance from Edmonton being two hundred and seventy to two hundred and eighty miles, and the trip may be made in row boats at any time during the season of open water, or in scows up to August 15 to September 15, and some seasons may be navigated with safety much later. There are two trails leading from the river, starting one on either side of the mouth of Vermilion river, from which roads have been cleared and graded to the top of the banks; and last season several settlers to the south purchased supplies

and machinery in Edmonton and brought them down the river to these points. The soil varies from sand to heavy clay loam, sand being found chiefly along the western tier of sections. That portion of the township south of the Saskatchewan is well adapted for mixed farming, excepting of course the valley of Vermilion river, but to the north the land is more broken and not quite so good but together with those sections in the valleys would be well adapted to sheep or cattle ranching. The surface south of the river and from the top of the valleys is a comparatively level plain covered largely with willow brush and scrub and a few groves of poplar timber, and numerous sloughs. To the north the surface is very broken and rolling with many sloughs and groves of poplar and willow. The valleys of both the Saskatchewan and Vermilion are very rough and broken and timbered, also considerable willow and rose brush and scrub. The size of timber varies about as follows: Poplar, four to sixteen inches in diameter; spruce, four to twenty inches in diameter; cottonwood, six to twenty-eight inches in diameter, and all three varieties are found in considerable quantities in the valleys. The greater portion of 29, 30 and 31 are also heavily timbered with poplar and a few spruce with occasional white birch three to six inches in diameter. There are also a few groves of poplar about the lakes in sections 25 and 36. The best hay lands observed are in sections 1, 2, 3, 4, 10, 11 and 12, and would amount to probably twelve hundred acres; the hay appears to be a good quality and would average from one-half to one and one-half tons per acre. The water in this township was fairly good, but few alkaline sloughs being noticed, Saskatchewan and Vermilion rivers providing an abundant and permanent supply. The Saskatchewan varies in width from twenty to twenty-five chains, depth three to six feet, current two and a half to three miles per hour. The Vermilion is good water, although slightly brackish. It is six to ten feet deep, one chain wide, current seven to eight miles per hour. The land in the valleys is liable to be flooded during the spring break-up from two to four feet deep. Irish creek, flowing into the Vermilion in sections 32, township 53, range 3, is two and one-half to three and one-half feet deep, twenty-five to thirty links wide, current four to six miles per hour. The fall on Vermilion river would range from eight to eighteen inches per one hundred feet and many places were observed where excellent water power might be developed; in fact owing to the rapid fall, almost any place along the creek could be utilized, probably a constant power of five hundred to eight hundred horse power might be economically developed, or more, depending upon the improvements. As to how this would be affected by winter frosts, I am unable to say. The climate was exceedingly fine during the past season; very slight rains fell during the summer, with very little frost or snow until after the middle of November and no summer frosts to speak of. Snow did not fall to make good sleighing until after Christmas. The fuel most readily available is poplar and spruce. It may be procured anywhere along the valleys, also in sections 30, 31, 25 and 36. There were no veins of coal observed in this township. There are no stone quarries in the township. There are no economic minerals in the township. Rabbits, muskrat, chicken and grouse abound. Duck were plentiful during the season, geese scarce. Several red deer and bear were seen along the valleys. Wolves and foxes are quite numerous; and a few lynx were seen.—*Adam Fawcett, D.L.S., 1904.*

Township 55.—The most convenient and economical manner of reaching this township during the season of open water is by way of Edmonton and Saskatchewan river, which flows through the southwestern portion of the township. The distance from Edmonton being about two hundred and eighty miles, the trip may be made in row boats at any time during the season of open water or in scows up to August 15 or September 15, and some seasons may be navigated with safety much later. The soil varies from sand to heavy clay loam, sand being found in the northwestern portion of the township. That portion of the township south of Alkali lake is well

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adapted for mixed farming, but the greater portion of the township is very much broken by low rolling hills and deep sloughs and is better adapted to cattle ranching or sheep raising. The surface south of the river is heavily timbered and rather broken. Numerous groves of poplar and willow are scattered over the whole township. Considerable poplar timber was found to the north and east of Alkali lake, three to ten inches in diameter. Along Frog creek are numerous groves of poplar and spruce and dense willow brush. Spruce, however, is not plentiful and averages four to sixteen inches in diameter. There is considerable timber along the Saskatchewan, poplar three to ten inches in diameter, cottonwood six to sixteen inches and spruce four to fourteen inches in diameter. All through the township are numerous groves of poplar, ranging from two to ten inches in diameter. The best hay lands observed are in sections 33, 28, 20, 21, 22, 16, 17, 8 and 9 and would amount to probably eight hundred or one thousand acres. The hay appears to be of good quality and would cut from one-half to one and one-half tons per acre. The township is abundantly watered by Saskatchewan river in the South, and Frog creek along its western boundary. The lakes are generally alkaline. The Saskatchewan varies in width from twenty to twenty-five chains, in depth from three to six feet, with a current of from two and one-half to three miles per hour. The water is fairly good, although when very low it is slightly brackish. Frog creek is sixty to seventy links wide, two to four feet deep, with a current of from four to five miles per hour. Lands adjoining both Frog creek and Saskatchewan river are probably liable to be flooded during freshets in the spring. Sucker creek is a small creek three to eight inches deep and three to ten links wide with a current of two miles per hour. Good water power may be developed in many places along Frog creek, the amount depending entirely upon the improvements made. The climate was exceedingly fine during the past season. Very slight rains fell during the past summer, with very little frost or snow until after the middle of November and no summer frosts to speak of. Snow did not fall to make good sleighing until after Christmas. The fuel most readily available is poplar wood and may be procured in many places throughout the township. It is, however, most abundant east of Alkali lake and along both banks of the river and also along Frog creek. There were no veins of coal observed in this township. There are no stone quarries in the township. No economic minerals, with the exception of drift limestone, which was observed along the river, were found in the township. Rabbits, muskrat, chicken and grouse abound; geese are scarce, but duck are plentiful during the season. Deer and bear were seen along the valley of Saskatchewan river. Wolves and foxes were quite numerous and a few lynx were seen.—*Adam Fawcett, D.L.S., 1904.*

Township 56.—The most convenient and economical manner of reaching this township is by way of Saskatchewan river from Edmonton to Onion Lake landing, in section 8, township 54, range 1, west of the fourth meridian, and thence by trail which leads directly into the township. With a small amount of work, however, a good landing might be made in township 55, range 3, in either section 7 or 8, and a trail now leads from the top of the bank in section 9. The river is navigable for small boats during the entire season of open water, and for loaded scows up to August 15 or September 15, and even later, depending upon the season. The soil is inclined to be very sandy although somewhat clayey in the valley of Frog creek. The land would be excellent for mixed farming over the whole of the township except when broken by the valley of Frog creek. The surface is rolling and generally timbered or scrubby. The north halves of sections 1 and 2 and the south halves of sections 11 and 12 are rather heavily timbered with poplar three to eight inches in diameter, and along the valley of Frog creek there is considerable poplar three to twelve inches in diameter, and a few spruce four to sixteen inches in diameter and very brushy. Some very fine hay meadows were noticed in

the north portion of sections 8 and 9 and also in sections 3 and 4 at the west end of Clear lake, and would amount to four hundred or five hundred acres. The quality appears to be good and would cut from one-half to one and one-half tons per acre. The water in Clear lake and many of the sloughs is slightly alkaline as is that in Sucker creek. Frog creek is a little brackish but may be used without inconvenience. Frog creek is the main source of water supply and is probably sufficient and permanent. It is sixty to seventy links wide, two to four feet deep, with a current of from four to five miles per hour. Lands adjoining are probably liable to be flooded during freshets from one and one-half to three feet. Sucker creek is a small creek three to eight inches deep and three to ten links in width with a current of two miles per hour. Good water power might be developed by dams in many places on Frog creek, the amount depending upon the improvements made. The ruins of an old water power mill were observed on the Indian reserve to the north of northeast corner section 8. The climate was exceedingly fine during the past season. Very slight rains fell during the summer with very little frost or snow until after the middle of November and no summer frosts to speak of. Snow did not fall to make good sleighing until after Christmas. The fuel most readily available is poplar wood and may be procured in abundance in the north parts of sections 1 and 2 and the south parts of 11 and 12, also along Frog creek and in many of the groves that abound throughout the township. There were no veins of in many of the groves that abound throughout the township. There were no veins of coal observed in the township. There are no stone quarries in this township. No economic minerals of any kind were observed in this township. Rabbits, muskrat, chicken, and grouse abound. Duck are plentiful during the season, geese are scarce. Deer were seen along the valley. Wolves and foxes are quite numerous and a few lynx were seen.—*Adam Fawcett, D.L.S., 1904.*

Range 4.

Township 52.—From Lloydminster I proceeded by way of Edmonton trail to range 4, west of the 4th meridian, thence northerly across the prairie to township 52, range 4, west of the 4th meridian. The southeasterly portion of the township is clay loam averaging from four inches to six inches of black loam on top with a clay subsoil. The other portion of the township (more than half) is very sandy soil with an average of four inches to six inches of black loam on top with sandy subsoil. The soil would be good for agricultural purposes. About one-half of the township is prairie. The balance is covered with poplar and willow, some of the groves containing poplar trees averaging from two inches to six inches in diameter, some as large as ten inches to twelve inches, good for building purposes. Sections 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12 have very little timber on them. The other part of the township has groves of poplar and willow scattered over it, containing some good building timber and firewood—plenty for quite a number of years. There are considerable hay lands along the valley of Vermilion river and along Deer creek, good quality and easily cut, with good hard bottom to the lands. Vermilion river flows through the southerly part of the township. In the early part of the summer its banks are overflowed and the flats covered in many places to quite a depth. The stream, while the banks are overflowed, is very difficult to cross. The current is very swift and in many places the stream is over ten feet in depth. It can only be crossed by boat and then with considerable difficulty. Up to the middle of July it will average from forty to fifty feet in width, and in the channel very deep. In September and October it is quite low with very little current, ten to twenty feet in width, and would be easily crossed were it not for its soft, muddy bottom. The banks are soft clay covered with willow brush and the river contains very good water. Deer creek is a small stream entering the township in section 31 and running southeasterly, falling into Vermilion river in section 14. It is ten to twenty feet in width.

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about eighteen inches in depth and a good current. The water is not very good there being too much vegetable matter in it. There are a few springs throughout the township, and there is very good water in the sloughs. There is very little alkali in the township. There are no water powers in the township. The climate is good with not much summer frosts. There are light showers of rain during the summer, sufficient for the growth of grain. The weather was fine up to the middle of November, with no snow up to that time. The only fuel in the township at present known is poplar wood of which there is a good supply scattered throughout the township, especially in the northern part. No stone quarries were observed in the township, but plenty of field stone for building purposes was seen. No minerals were seen in the township. Small game, such as wild duck, partridge, chicken and sandhill crane are quite plentiful. A few deer and an occasional bear were seen. This township is well adapted for ranching, plenty of good hay can be cut along the flats of the streams and around some of the sloughs. There is good pasture amongst the poplar groves, where there is an abundance of wild peas and wild vetches, also good grass. There are two persons by the name of Tremble who have commenced ranching in the township. They are located in section 10, commencing with about sixty head of cattle and a few horses.—*Lewis Bolton, D.L.S., 1904.*

Township 53.—Completing my party at Lloydminster, I proceeded by Edmonton trail westerly to range 4, west of the fourth meridian, thence northerly across the prairie to township 53, range 4, west of the fourth meridian. The soil throughout the township is sandy with an average of nine inches of black loam on top. All of the township, with the exception of the southwest quarter, is level, the greater portion thereof being hay meadow, containing red top grass from two to three feet in height, with smooth solid bottom—splendid opportunities for hay. These meadows have groves of dead poplar and willow in them. The balance of the township (southwest quarter) is rolling and contains fine pasture for horses and cattle. Wild pease and vetches grow very luxuriantly on the high lands amongst the groves of poplar and willow. Wild grasses also grow to a good length on the uplands and afford abundant feed for cattle and horses. Thousands of tons of hay could be cut and of the best quality, especially in the eastern and northern parts of the township. No streams or creeks were found in the township with water flowing in them. In a dry season water would be scarce in the township. There are a number of sloughs throughout the township with fairly good water in them, but none of these contain springs. There are a few small lakes in the southwest part of the township with fairly good water in them. There is very little alkali in the township. The climate is good. There are very few summer frosts. There are plenty of light showers through the summer months and nice open weather until late in November. The only fuel found in the township is poplar timber. There are a good many groves scattered through the township, a good portion of which are dead, having been killed by prairie fires a few years ago and are still standing. The timber throughout the township is poplar averaging in size not more than four inches to six inches in diameter. There is very little timber fit for building purposes in the township. No stone quarries were observed in the township, but sufficient field stone are scattered over the township for building purposes. No minerals were found in the township nor were any mineral bearing rocks seen. Small game, such as duck and chicken were quite numerous, but very few large game were seen. Prairie wolves and foxes were plentiful. This township is exceedingly well adapted for ranching. any amount of hay of choice quality can be had in the meadow lands, and the uplands are covered with wild peas and vetches and other vines and grasses, affording almost unlimited pasture and feed for horses and cattle. There were no settlers in the township at the time of survey. One log shanty had been put up the summer before, but partly finished and appeared to be abandoned.—*Lewis Bolton, D.L.S., 1904.*

Township 54.—Completing my party at Lloydminster, I proceeded by Edmonton trail westerly to range 4, thence northerly across the prairie to township 54, range 4, west of the fourth meridian. The soil throughout the township is chiefly sandy soil with an average of six inches of black loam on the surface. The greater part of the township is level or gently rolling, that portion lying along Spring creek being hilly. Very little of the township is clear prairie, a good portion being meadow land with bunches of willow and groves of poplar and willow scattered through them. Most of the timber in the township is small, averaging from two to three inches in diameter. In sections 8, 9 and 10 there is considerable poplar running as high as six inches to eight inches in diameter and some as high as twelve inches in diameter. Poplar and willow are the only kinds of timber found in the township. Large quantities of hay could be cut in the township, the greater portion of the land being meadow, producing red top grass. Considerable wild peas and vetches could also be obtained for hay along the edges of the meadow land amongst the groves of poplar and willow. A very fine spring stream averaging about eight feet in width, eighteen inches in depth with good current—excellent water—enters the township in section seven, flowing easterly four miles, thence southeasterly, leaving the township in section 1. A few sloughs scattered through the township and one lake in sections 19 and 20 contain fairly good water. The climate is good. There are few frosts, frequent showers of rain through the early summer months and very fine open weather until the middle of November. The only fuel found in the township is poplar wood of which there is sufficient for a good many years if the township were well settled. No stone quarries were observed in the township. Considerable field stone are scattered over the township, sufficient for building purposes. No minerals were found in the township nor any mineral-bearing rocks. Small game, such as partridge, duck, chicken, rabbits and sandhill crane were quite plentiful. A few deer and an odd bear and lots of prairie wolves and foxes were seen. The township is well adapted for ranching, there being plenty of hay lands, excellent pasture, and good shelter for cattle and horses. There are no settlers in the township. Two small log shanties had been partly completed on sections 1 and 2, but according to appearances had been abandoned.—*Lewis Bolton, D.L.S., 1904.*

Township 55.—I proceeded from Lloydminster westerly along Edmonton trail to range 4, west of the fourth meridian; thence northerly across the prairie to township 55. The soil is chiefly sandy loam averaging from four inches to six inches on surface with sandy subsoil. It is not very good for agricultural purposes, being rather sandy, and a very stony subsoil. The surface is generally timbered with very little prairie and is gently rolling, with the exception of along Saskatchewan river, where the banks of the valley are very high and very broken. The timber in the southerly part of the township is small and scrubby, in the northerly part along Saskatchewan river the timber is much larger, being chiefly poplar; there are some groves of spruce along the sides of the valley of the river, and some spruce and tamarac along the edges of the swamps and muskegs in the northwesterly part of the township, some of the spruce and tamarac being as large as eighteen inches in diameter. The poplar along the banks and in the valley of the river will average from six inches to eight inches in diameter and some as high as ten inches to twelve inches in diameter and a good height. There is not much hay land in the township. In sections 5, 6, 7 and 8 small quantities could be cut in the meadows amongst the groves of poplar and willow. There are not many sloughs in the township containing good water. The chief supply is Saskatchewan river, and small spring streams rising in the muskegs in the northwesterly portion of the township and flowing into Saskatchewan river. There are no water powers in the township, the streams flowing into Saskatchewan river being too small. The climate is very good. There are very few summer frosts, frequent gentle showers during the

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summer months, fine open weather until late in the month of November, and very little snow before the middle of December. Fuel is quite plentiful in the shape of poplar wood. In the southerly part of the township the timber is small, but there is plenty of it; in the northern portion of the township there is an abundance of good large timber for building purposes as well as for fuel. All along the Saskatchewan river the timber is large and of good quality. There are no stone quarries in the township, but plenty of field stone. No minerals of any kind were found in the township nor any mineral-bearing rock. Partridge and rabbits were plentiful. A few chicken, a large number of prairie wolves, an odd timber wolf, a few deer and an occasional bear were seen. This township is not well adapted for agricultural purposes. The soil is not rich enough and covered too much with scrub and timber, a limited number of cattle could be kept in the southwestern part of the township, but the township will be valuable for timber.—*Lewis Bolton, D.L.S., 1904.*

Township 56.—I proceeded to this township from Lloydminster along Edmonton trail to range 4, west of the fourth meridian; thence northerly across the prairie to Saskatchewan river, crossing it in a scow with our outfit, excepting horses and wagons, which I had to send around by way of Hewit's ferry, near Fort Pitt, to Onion Lake; thence westerly by Edmonton trail to township 56. The soil is chiefly sandy loam averaging two inches to four inches in depth with sandy subsoil. There is very little clay in the township. Along the north boundary and in the northeast corner of the township there is a light clay loam averaging two inches to four inches in depth with hardpan subsoil. All through the township the subsoil is full of stone, varying very much in size. The soil is not adaptable for agricultural purposes. The surface is generally rolling; in the northwest corner it is rather hilly especially along the north boundary. There is very little prairie in the township. There are several lakes of considerable size. Sections 1, 2, 3, 4, 5, 6, 11, 12, 13, 14, 15, 16, 17, 20, 21, 23, 25, 26 and 27, are fairly well covered with poplar timber from four to ten inches in diameter; some as high as twelve to fifteen inches—a few even larger. In sections 6, 9, 10, 11, 14, 15 and 16 there are considerable spruce, tamarac and jackpine, the same being from twelve to fifteen inches in diameter—a few even larger. In the northerly and westerly portions of the township the timber is small and scrubby with thick undergrowth of wild rose and other scrub. There is very little hay in the township. All the lakes and streams in the township contain good fresh water. Saskatchewan river, which enters the township in section 7, flowing southwesterly, and leaving the township in section 4, is a very large stream. It varies from eight chains to twelve chains in width, three to five feet in depth in low water (except in rapids), current two to four miles per hour and contains the best of water. Middle creek enters the township in section 32, flowing southwesterly, leaving the township in section 19. This creek, when flowing out of Lake Borden is very much larger than when entering the same lake, and is likely fed from the lakes in the central part of the township. The creek is sluggish until it passes partly through section 19, where it becomes quite rapid and continues flowing rapidly until it enters Saskatchewan river just outside of the township. Power to the extent of fifteen to twenty horse-power could be obtained on the lower part of this creek, there being sufficient fall and advantageous places along the stream to build dams. The climate is good, there being very little summer frost, frequent light showers of rain during the summer months, fine open weather in the fall until the middle and even later in November, a light snow fall during the winter, and the average of stormy days through the winter, small. Wood was the only fuel found in the township, of which there is a large quantity. No stone quarries were found in the township, but lots of field stone scattered throughout. No minerals were found in the township nor any mineral bearing rocks. Rabbits, partridge, duck and prairie wolves were plentiful; a few prairie chicken, and traces of a few deer and an occasional bear were seen. Fish were quite plentiful in the lakes. I had no way or means of taking any, so cannot give

varieties. The township is not adapted for either farming or ranching. Timber will likely be the chief product of the township.—*Lewis Bolton, D.L.S., 1904.*

Range 5.

Township 37.—This township is accessible from Battleford by Sounding lake trail, also from Medicine Hat and Wetaskiwin by trails which are used by ranchers in the locality. The several trails present no greater difficulties to travel except those which affect all trails alike, viz.: periods of wet weather. The soil is either clay or sandy loam, both being found in the township. With the exception of the southwest corner of the township, which is occupied by the easterly projection of the Neutral hills, the surface is comparatively level. There is considerable poplar timber in the northeasterly part of the township suitable both for fuel and small building logs. Trees run up in size to 10 inches in diameter. There is considerable hay in sections 1, 2, 11, 12, 18, 19, 17 and 20. A nice spring of excellent water flowing all the year round rises in section 15 and flows across section 11, after which it disappears. In section 11, Wilkinson and McLeod Brothers, who brought into the Northwest some three thousand cattle a year ago last summer, have their headquarters. There is abundant fresh water in ponds in all parts of the township. Vegetables matured at the ranch without injury by frost. There is plenty of dry poplar to supply fuel for some time to come, but no coal nor signs of valuable mineral deposits anywhere. There are not many boulders except in the Neutral hills near the southwest corner of the township. Game consist of duck, geese, prairie chicken, rabbits, foxes, wolves and small deer. The township is well adapted to ranching or for mixed farming.—*Thos. Fawcett, D.L.S., 1904.*

Township 38.—Access to this township may easily be obtained via Battleford, Wetaskiwin or Medicine Hat, there being little difference in the choice of routes. The location survey of the G.T.P. Ry. lies within 10 miles north from the township. The soil is mostly of a sandy nature and would produce good crops in wet seasons, but when dry, not so good. The surface is mostly hilly with a considerable percentage of the hills in the east half of the township covered with scrubby poplar generally too short and brushy to be of value except for fuel. West of the centre meridian is prairie with the exception of two or three small poplar bluffs. There is some hay land in the vicinity of lakes and ponds, but no extensive area. The water is fresh and good in small ponds, but larger lakes are alkaline. There are no streams of running water except a small spring creek joining two lakes in section 30. The climatic indications are good, there being no marks or signs of summer frosts. The scrub poplar in the east part of the township will meet the demand for fuel for some years to come. No indications of coal or other mineral deposits were seen. The game consist of duck, geese, prairie chicken, foxes, wolves and jumping deer.—*Thos. Fawcett, D.T.S., 1904.*

Township 39.—This township is accessible either from Wetaskiwin by a trail or from Battleford, there being no great obstacles in the way from either direction. The location survey of the G.T.P. Ry. passes near the north boundary of the township. The soil is mostly a black sandy loam with either a sand or clay foundation and it is adapted for the growth of vegetables, oats, &c. The surface is hilly and broken by lakes, while there are many patches of inferior poplar timber. The hay supply is below the average, there being only a few hay marshes of small size. The ponds are usually surrounded with a fringe of poplar or scrub willow. Water in the small ponds is fresh and good, while in the larger lakes it is alkaline. There are no streams of running water in the township. Climatic conditions seem favourable, we did not see any indications of summer frost. There is plenty of poplar—in places dry—for fuel and some trees large enough for building logs, but the timber as a rule is scrubby. No indications of coal or of other minerals of economic value were seen. There are very few boulders and no outcrop of rock. Game consists of duck, geese, chicken, wolves, foxes and small deer.—*Thos. Fawcett, D.T.S., 1904.*

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Township 40.—This township is accessible from Wetaskiwin by following a beaten trail or from Battleford by following the eleventh base line west from Sounding lake trail crossing Eyehill creek, being the only obstacle in the way. The G.T.P. survey for location crosses the township near the south boundary. The soil is a sandy loam with a sand subsoil and is adapted for growing either vegetables or grain. The surface is undulating, but not too hilly. There are several clumps of poplar timber in different parts of the township which would about meet the local requirements for fuel and building logs in the township. Trees will be found up to eight inches in diameter. There are small hay marshes in nearly all sections, but no large areas. Fresh water is plentiful in ponds. Some larger lakes are alkaline. There are no streams of running water. Vegetation seems luxuriant and there are no indications of summer frost. Plenty of dry poplar is found for fuel but there were no indications of coal or other minerals of economic value. There is no outcrop of rock and scarcely any boulders. Duck, geese, prairie chicken, rabbits, foxes, wolves and deer are about the only game to be met with. The township is well adapted for either ranching or mixed farming.—*Thos. Fawcett, D.T.S., 1904.*

Township 41.—This township may be reached from Wetaskiwin, via a trail to a ranch in township 40, range 6, or from Battleford via Sounding lake trail to the eleventh base, then following the base west, the only obstacle of importance to be met is Eyehill creek. The soil is a sandy loam with a sand subsoil and should be well adapted for growth of vegetables and grain in favourable years. The surface is broken by hills and many lakelets or ponds, while scrubby timber is found in nearly every section of the township; there is also some marshy ground, which is impassable with horses. Hay is found in small quantities on flats and around the ponds. The water in the larger lakes is alkaline, but there is an abundant supply of fresh in smaller ponds. A small stream which flows out of David lake in section 35 leaves the township in section 13, while Ribstone creek flows along near the west boundaries of sections 30 and 31, through a marshy flat which is very miry. Climatic indications are favourable. The timber found in the township will supply fuel, fencing posts and inferior building logs. There are few boulders or rock of any kind in the township and no indications of minerals of economic value. In game, we found duck, geese, prairie chicken, foxes, wolves, jumping deer, rabbits and muskrat.—*Thos. Fawcett, D.T.S., 1904.*

Township 45.—A trail runs from Lacombe to Ribstone creek, township 44, range 5, west of 4th meridian, and thence into this township. This trail is generally very good but is round about, keeping south of Battle river. The eastern part of the township is black loam on clay suitable for farming, while the eastern part is sandy and suitable only for ranching. The surface is generally prairie, with some bush and scrub in the south and around a few of the lakes. There is some six-inch poplar situated on sections 3 and 4, but all will be required by settlers. The water in the larger lakes is alkaline, but fresh in the sloughs. The supply is sufficient and permanent. One small stream drains the lakes in the eastern part of the township into the large lake at the west (Baxter lake). It is slow and probably dries up in the fall. There is no water power available. No summer frosts were observed. The climate was similar to that of western Saskatchewan. Wood is the only fuel available in the township. There are no coal or lignite veins, no stone quarries nor economic minerals. No game was seen in the township. There are some fine springs in a muskeg at the southwest corner of Baxter lake in section 8.—*C. C. Fairchild, D.L.S., 1904.*

Township 46.—The best route for reaching this township would be by the old Telegraph trail from Wetaskiwin to Battleford, as far as range 6, west of the fourth meridian, and thence southeast to and across Battle river and thence to the township. The main difficulty would be in crossing Battle river, otherwise the trail is good except in spring. The soil is generally of a good black loam, suitable for farming. The surface is generally scrubby. The southwestern and northeastern portions are more open while

a great part of the township is about half covered with bush and scrub. There is some good poplar located on the northwest quarter of section 22, average diameter ten inches, about forty acres in extent. There are no hay lands. The water is generally fresh in the small sloughs and streams, but both lakes shown are alkaline. The streams are very small and probably dry up entirely in a dry season. There are no water powers available. No summer frosts were observed. The climate is that of western Saskatchewan. Wood is the only fuel available and can be procured in the township. There are no coal or lignite veins in the township, no stone quarries nor any minerals of economic value. Deer and prairie chicken were seen in the township. On the whole this is one of the best townships seen east of Battle river.—*C. C. Fairchild, D.L.S., 1904.*

Township 47.—A good trail from Edmonton and Wetaskiwin to Battleford passes about three miles to the north of this township. The soil is generally a good loam, but owing to the very rough surface it is not generally adapted for farming but rather for ranching. The surface is prairie with some scrub and cottonwood in the southwestern portion and along Battle river but barely enough for settlers for fencing and building. There is very little good hay in the township. The water is fresh in Battle river and in the small creeks shown. The river averages six feet in depth and two chains in width, with a strong current. There is little liability of flooding. There is no water power available except by dams, and that would hardly be practicable. No summer frosts were observed. The climate is good. Wood is the only fuel available, and can be procured along the river. No coal, lignite, stone quarries, or minerals of economic value were found. Jumping deer, duck, and prairie chicken were seen in the township.—*C. C. Fairchild, D.L.S., 1904.*

Township 52.—Completing my party at Lloydminster, I proceeded by Edmonton trail westerly to range 4, west of the fourth meridian; thence northerly across the prairie to township 52, range 4; thence westerly into township 52, range 5, west of the fourth meridian. The south half of the township is sandy soil with a black loam on top averaging from four inches to six inches in depth. The north half is chiefly clay with a black loam on the surface averaging about six inches. The soil is good for agricultural purposes. About one-half of the township is prairie; the other half is covered with poplar groves with willow undergrowth. The northern part of the township is hilly. The balance is rolling and the south mile across the township is level. Some of the groves of poplar contain trees averaging from six to eight inches in diameter and a few ten inches to twelve inches in diameter—chiefly in the east half of the township. There is very little timber in the westerly third of the township. The east half of the township contains a number of large sloughs also a number of small ones. Considerable hay could be cut around the sloughs throughout the township and along Campbell creek, also along the valley of Vermilion river. Campbell creek flows out of Somerset lake southeasterly into the Vermilion river, passing through sections 17, 16, 15, 10, 11 and 2. Vermilion river runs through section 1. These two streams contain good water. Somerset lake also contains very good water; the other small lakes and sloughs throughout the township contain fairly good water. There is very little alkali in the township. There are no water powers in the township. The climate is good. There are very few summer frosts until late in the season, light showers of rain through the early part of the summer and fine open weather until the middle of November. The only fuel in the township is poplar wood, of which there is sufficient for a good many years, situated chiefly in the easterly part of the township. There are no stone quarries in the township. Plenty of field stone is scattered over the township for building purposes. No minerals were observed nor any mineral-bearing rock. Small game, such as wild duck, prairie chicken, partridge, sandhill crane, &c., are quite plentiful. There are a few deer and now and then a bear. Foxes and prairie wolves were very plentiful. This township is well adapted for agriculture. The soil is very productive. There is plenty of fuel and considerable building timber. It is also good for

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ranching, there being good pasture all over the township, and considerable hay lands. There are two settlers in the township by the name of Somerset, on section No. 18.—*Lewis Bolton, D.L.S., 1904.*

Township 53.—This township is best reached by the trail which follows the Canadian Northern railway along the south side of Vermilion river. This is a good trail. The north and east parts are a little light, but the rest of the township is first class and is suitable for mixed farming. In the north third of the township there is considerable poplar bush averaging six inches in diameter, the centre third is partly covered with poplar in bluffs, while the south third is nearly all open prairie. There is considerable hay land around the lakes and sloughs. It is of good quality. The water is all fresh with the exception of one or two alkaline marshes. There are no water powers. Dry poplar is available in sufficient quantity to supply settlers with fuel for many years. There are no stone quarries and no minerals. Deer and moose were seen.—*M. B. Weekes, D.L.S., 1904.*

Township 54.—This township is best reached by means of the old trail, which runs along the south side of Vermilion river, a branch running close to this township. The soil in this township is a little light, but on the whole is well suited to mixed farming. The surface as a whole is gently rolling and is covered in the southwest part with heavy poplar containing a large amount of dry poplar. The northeast part is somewhat open, the balance being poplar and willow scrub. There is considerable hay available around the sloughs and lakes. The water is fresh and the supply is permanent. There are no water powers. No summer frosts were encountered. Dry poplar is available in large quantities in all parts of the township. There are no stone quarries. There are no minerals. Several bear were seen, besides numerous duck and chicken.—*M. B. Weekes, D.L.S., 1904.*

Township 55.—The best route for reaching this township from Edmonton is by Saskatchewan river. It can also be reached from Lloydminster by a trail which crosses Vermilion river in range 5, and joins the old Battleford trail a few miles south of the river. The soil is light except in the southwest corner, where there is some good land. The balance of the township is not suitable for farming. The surface, as a whole, is gently rolling except for a wide coulée which extends northwesterly across the township. The surface is all covered with poplar bush and scrub, the scrub being mixed with the poplar. The north two miles of the township is covered with heavy timber, poplar and scattered spruce and tamarac, south of that line the timber is smaller. There is no hay. The water is all fresh. There are no water powers. There were no summer frosts. There is plenty of fuel all over the township, dry poplar being mixed with the green. There are no stone quarries. There are no minerals. Bear and moose were seen, besides ducks, geese and rabbits.—*M. B. Weekes, D.L.S., 1904.*

Township 56.—The best route for reaching this township in the summer is by the Saskatchewan, which is navigable for large scows from Edmonton. A good trail also runs along the north side of the river, following the government telegraph line. The soil is very light on the north side of the river and is but little better on the south side. The township is covered almost entirely with poplar, spruce and jack-pine, the poplar being by far the more numerous. The timber runs from 4 to 12 inches in diameter. It is especially heavy on the south side of the river. A few birch trees are also found. There is a little hay land on the north side of the river along the trail, but none on the south side. The water in this township is all fresh. Saskatchewan river runs across it. It is about 10 chains wide and is too deep to be forded, the water being 15 feet deep in places. The current is about 4 miles an hour. There are no water powers. The summer of 1904 was warm and bright. No frosts were encountered after the middle of May. Wood for fuel can be procured in large quantities in any part of the township. There are no stone quarries. No minerals were seen. Bear,

moose, jumping deer and coyotes were frequently seen, also numerous ducks and rabbits.—*M. B. Weekes, D.L.S., 1904.*

Township 57.—There is a good road leading into this township from Moose telegraph station on the St. Paul de Metis and Onion lake trail. The soil is very good loam with clay subsoil and suitable for general farming. It is chiefly covered with scrub with numerous clumps of poplar and a few clumps of small spruce. There is not much hay land and in very small patches. The water is all fresh and good and in sufficient supply. The streams are small, of which the two branches of Moose creek are the largest. The land is not liable to be flooded. There are no water powers. The climate is delightful. Summer frosts are rare. There is sufficient wood for fuel. We saw no valuable minerals of any kind. Among game there are deer, moose, duck and bear.—*M. W. Hopkins, D.L.S., 1904.*

Township 58.—The good trail from Indian reserve No. 123 to Onion lake passes across the township from section 31 to section 2. The soil is number two and suitable for general farming. The surface is covered with scrub or brush with numerous patches of eight-inch poplar and clumps of spruce along streams. The northeast part is hilly and heavily wooded with larger poplar with a little spruce. There is no hay land. The water is abundant and fresh. The land is not liable to be flooded, and there are no water powers. The climate is delightful and summer frosts are rare. There is plenty of wood in the township for fuel. We saw no valuable minerals. Among game animals are to be found deer, moose, bear, fox, duck, rabbit and part-ridge.—*M. W. Hopkins, D.L.S., 1904.*

Range 6.

Township 36.—The means of ingress to this township is from Medicine Hat or Wetaskiwin, following trails made by ranchers or from Battleford via Sounding lake trail. The location survey of the Grand Trunk Pacific railway is distant about twenty miles to the northeast. The soil is mostly a clayey loam with clay subsoil. The northerly portion of the township is nearly level, while the south half is very hilly and broken. There is no timber except a fringe along the west side of Gooseberry lake, which is mostly fire-killed. Hay land is scarce, there being a few marsh meadows of small area. The water is generally of good quality, but is scarce in some parts of the township. There are no running streams of any size, but an overflowing spring sends quite a stream into Gooseberry lake at the southwest corner and several smaller springs deliver smaller streams at other points around the lake. There were no indications of summer frost noticeable, and climatic conditions seem favourable. No indications of coal or other minerals of economic value were observed. There is a sprinkling of boulders, both limestone and hard heads, which may serve a useful purpose. Game consists of duck, geese, prairie chicken, foxes and wolves. The township would be adapted for grazing and also for mixed farming.—*Thos. Fawcett, D.T.S., 1904.*

Township 37.—This township is easily reached from Battleford via Sounding lake trail or from Medicine Hat or Wetaskiwin via trails made by ranchers. The location survey of the G.T.P.Ry. lies fifteen miles to the north. The soil is generally a sandy loam underlaid with clay, and the surface fairly level in the north half of the township, while the south end is crossed by the Neutral hills, which rise to an elevation of about 400 feet. There is a little timber in the hills and fringes on the south sides of lakes on the flats, but not enough for requirements of settlers. Timber can be obtained in the township adjoining to the east. There is some hay land in the north and northwest parts of the township, and all hay is of good quality. Water is mostly fresh in both ponds and lakes. One or two small spring creeks flow from the hills but soon lose themselves on the flats to the north. A trail from Sounding lake runs west across the township at the foot of the hills on the north. Vegetation would point to a favour-

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able climate, with no indications of summer frosts. No signs of coal or other minerals of value were observed. Boulders are scattered over the hills in spots and are very thick in some places. The township is adapted for either ranching or mixed farming. The game consists of duck, geese, prairie chicken, foxes, wolves, jumping deer, &c.—*Thos. Fawcett, D.T.S., 1904.*

Township 38.—At present this township is accessible from Battleford, Wetaskiwin or Medicine Hat, there being little choice as to which route is taken. The location survey of the G.T.P.Ry. is within ten miles to the north, and will be convenient when that part of the road is constructed. The soil is sandy loam on the east, merging into clay westward so that sixty per cent of the land would be classified as clay loam with clay subsoil. The east half of the township is hilly and broken with lakes and ponds, with some poplar around the southerly margins of lakes. The west part is undulating, mostly dry, with a few clumps of scrub and small poplar timber. There is some hay land around lakes and ponds but not in large quantities. The water in larger lakes is alkaline, but fresh in small ponds and muskegs, and there are several springs of good water flowing into the lakes. These in places form small streams which flow in spots, but generally in underground channels. Climatic conditions seem favourable, there being no indications of summer frost. The poplar around lakes would afford a limited supply of fuel, and more could be obtained in the adjoining township to the east. Boulders are scattered in spots, but no outcrop of rock or indications of coal or other minerals of economic value were observed. The game consists of duck, geese, grouse, foxes, prairie wolves and jumping deer. The country is adapted for either ranching or mixed farming.—*Thos. Fawcett, D.T.S., 1904.*

Township 39.—There are no travelled roads passing through this township, but it is easily accessible from either Battleford or Wetaskiwin, from which it is about equidistant. The location of the G.T.P.Ry. passes through the township joining this on the north. The soil is a sandy loam usually with a sandy subsoil, and is adapted for growing either vegetables or grain in seasons when the rain supply is normal or above. The surface is rolling and hilly, broken by lakes and ponds, which are usually surrounded with a fringe of poplar timber. The water in the larger lakes is alkaline or bitter, but fresh in ponds, and on the north boundary of section 11 is a flowing spring of delicious water. There is not much meadow land owing to the undulating surface. There are no running streams except Ribstone creek, which penetrates the township and follows it for some distance near the west boundary in a marshy flat. The poplar already mentioned would afford a limited supply of fuel and small building logs. There are a few sections containing patches of stony ground and a supply of stone for foundations, but no outcrop of rock or indications of valuable minerals were observed. The township is especially adapted for summer pasture, and in a second degree for mixed farming. The game consists of duck, geese, prairie chicken, foxes, wolves and jumping deer.—*Thos. Fawcett, D.T.S., 1904.*

Township 40.—The ranchers who live in this township, having their headquarters on section 4, use Wetaskiwin as a base of supplies, but Battleford is about the same distance away and equally accessible. The location survey of the G.T.P.Ry. crosses the township diagonally from southeast to northwest. The soil is for the greater part sandy loam with sandy subsoil, but there is some clay soil near the northwest corner of the township. It is well adapted for growth of both vegetables and grain during seasons when moisture is abundant. The surface is hilly and quite broken in places by lakes, clumps of timber and by Ribstone creek, which flows through the township diagonally from southwest to northeast. About two-thirds of the township at the northwest is open prairie. The best timber will be found along Ribstone creek, where building logs 8 and 10 inches in diameter can be obtained. A large quantity of hay can be cut in the flat along the stream also on the west side of Houcher lake, in sections 5 and 6, especially in dry seasons, similar to that of 1904. There are no rapids

nor mill sites on the stream, which is generally sluggish. Climatic indications seem favourable, and there seems to be little if any injury from summer frosts. Dry poplar for fuel can be got along the creek and from bluffs in other localities. There are no indications of coal or other minerals of value, no outcrop of rock and but little stony land. Duck, prairie chicken, geese, foxes and wolves remain here part of the year. Houcher Bros., who have lived in the township some five years, have about 500 head of stock, which feed on the prairie a good part of the year.—*Thos. Fawcett, D.T.S., 1904.*

Township 41.—The means of access to this township is either from Wetaskiwin by trail or from Battleford by way of Sounding lake trail to the eleventh base line in range 23, then west following the base line to this part of the country. The G.T.P. Ry. location survey passes within three miles from the south boundary of this township. The soil varies from a sandy loam on the east to clay loam on the west and is well adapted for all purposes of agriculture. The surface is more or less undulating and hilly prairie, with the exception of a few sections along the east boundary of the township and willow muskegs which are scattered over all parts where the water is invariably fresh and good. A few small hay marshes will produce a limited supply of feed. Ribstone creek crosses the township in sections 2, 11, 13, 14 and 24 in a marshy flat. There are no rapids or waterfalls. The stream during the month of June would be from 3 to 4 feet deep with miry bottom and about 50 feet wide. There were no indications of summer frosts, but vegetation points to a favourable climate. There is some wood suitable for fuel in the easterly part of the township, also building logs of inferior quality. No indications of coal or of other minerals of economic value were observed. But few boulders were seen and no rock in place. The game consists of duck, geese, chicken, foxes, wolves and jumping deer.—*Thos. Fawcett, D.T.S., 1904.*

Township 46.—The shortest route to this township from the railway would be from Wetaskiwin via the Battleford trail to Buffalo coulée and thence along the coulée on the west side to the township. This trail would be good, except in spring. The soil is mixed, the north part being heavier, but more broken, while the south is level but sandy. It is suitable for ranching rather than grain raising. The portion along the river and the whole north half of the township is covered with patches of poplar, while the south part is quite open. The timber is poplar and cottonwood, but is not of sufficient quantity or quality for reservation. There is no hay. The water is generally fresh except the lake in section 1, which is unfit for use. There are numerous springs on the east side of Battle river which furnish beautiful water. Battle river furnishes a permanent supply of water of good quality. It averages from two to three chains in width and at time of survey (July 1) was not fordable at any point in the township. There is little danger of flooding. There is no place suitable for water power even with the construction of a dam. The climate is that of Saskatchewan; no summer frosts were observed. Wood is the only fuel obtainable and sufficient for settlers use can be obtained in the township. I saw no coal or lignite, no stone quarries nor economic minerals in the township. Deer, bear and chicken were seen in this township.—*C. C. Fairchild, D.L.S., 1904.*

Township 51.—The best route for reaching this township is by trail from Whitford lake, or by another trail from Vegreville. The soil is of various depths, from three to fifteen inches, with a subsoil of sand and clay. The subsoil along the banks of Vermilion river is sand and gravel. The surface may be called high rolling and in some places hilly. It is dotted with poplar groves and scrub and brush, which are to be found on almost every section, suitable for small buildings, fencing and fuel. The size of the poplar trees found in the clumps or bluffs varies from two inches to eight inches in diameter. These clumps or bluffs of poplar are to be found on almost every section. There is a large quantity of hay in the valley of Vermilion river, being cut by some ranchers, who own from two to three hundred head of cattle and horses,

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pasturing their animals on the high lands. These ranchers cut the hay required to winter their animals, in the marshes of Vermilion river. The hay is a coarse variety, growing very high. In dry seasons a large quantity of hay can be cut, in wet seasons not so much. The water found in this township is fairly good, a little being alkaline. The water found in the lakes and ponds tastes of vegetable matter. Vermilion river, which runs through this township from west to east, is a stream of from sixty to seventy feet wide and in low water from four to five feet deep. The water is a little alkaline, with a current about one mile per hour, well stocked with jackfish and suckers. The land in the valley of the Vermilion is liable to be flooded in the spring and summer. In an ordinary summer it is a stream of about a chain or so wide; when flooded it is from ten to fifteen chains wide in some places and two to four feet above the marshes. There are no water powers. The climate I found the same as at Edmonton, and I think there are no more summer frosts than at that place. The kind of fuel most readily available is poplar wood. It can be procured on every section within this township. No stone quarries were found. Boulders can be found on almost every hilltop and in watercourses. No coal or lignite was seen. Very little game of any description was met with. A few ducks were seen on the lakes and ponds. Prairie chicken and partridge are very scarce.—*Robert W. Lendrum, D.L.S., 1904.*

Township 52.—The route for reaching this township is by a cart trail from Whitford lake or from Vegreville. In dry weather both of these trails are passable. The soil in this township is a dark brown loam of from three to ten inches in depth, on a subsoil of clay and is suitable for growing crops of oats, wheat and barley. The soil in its present state supports a fine growth of grass, making admirable pasture for cattle and horses. The surface is rolling and in places hilly prairie, overgrown in places with scrub, willows and poplar, with scattered groves of poplar trees averaging about four or five inches in diameter, suitable for small buildings, fencing and fuel. Several small lakes and ponds are scattered over this township, and two large lakes were traversed, one of them partly situate on sections 22, 23, 26 and 27, and the other on the eastern boundary of the township, part on sections 13 and 24. No large area of hay land was seen, but hay in small quantities could be cut around several of the lakes and sloughs. The water found in the lakes was fairly good; in the smaller ponds it is a little alkaline, but not unpleasant. The supply in the larger lakes is permanent. In dry seasons the smaller lakes and ponds would dry up. No streams of considerable width or depth were found, or waterfalls or mill sites. The climate I found to be similar to that around Edmonton, and no more liable to summer frosts than that place. The kind of fuel most readily available is poplar wood, of which the supply for a few years is sufficient. No indications of any veins or beds of lignite or any other coal were seen, and no stone quarries were discovered. Boulders can be found on many of the hilltops and in water courses. Prairie hens and ducks were the only game met with and these only in small numbers. The ranchers, who are settled along Vermilion river, are in the habit of setting prairie fires in the early summer months, for the purpose of (they say) improving the pasture for their herds of cattle and horses. These fires destroy the prairie hens' nests and burn up clumps of poplars, which would be very useful to incoming settlers.—*Robert W. Lendrum, D.L.S., 1904.*

Township 53.—This is best reached by the trail which follows along the south side of Vermilion river. There is a good ford across the river in range 5. The soil is of fair quality, but part of the township is too rough to be called first-class farming land. It is suitable for mixed farming. The north two-thirds of the township is partly covered with bluffs of poplar and willows. The south third is almost all bare prairie. The poplar bluffs are large enough to provide building material for settlers and also fuel. There is some hay around the sloughs and marshes. Some of the sloughs and marshes are alkaline, but the majority are fresh. There are no water

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powers. There were frosts every night while surveying this township. There is plenty of dry poplar, to supply settlers with fuel, in the northern part of the township. There are no stone quarries. There are no minerals. Moose were seen in this township.—*M. B. Weekes, D.L.S., 1904.*

Township 54.—The trail along Vermilion river is the best way of getting to this township. There is a good ford on the Vermilion in range 5. The soil is fair and would be suitable for mixed farming if the land were more level. The surface is almost all covered with bluffs of poplar and willows. They are distributed evenly over the whole township, the poplar getting a little heavier towards the north. Poplar up to eight inches in diameter is abundant in all parts of the township. There is no hay land. The water is all fresh and the supply is permanent owing to the numerous large lakes. There are no water powers. The climate is the same as adjoining townships. All the small sloughs froze over in September. There is plenty of dry poplar for fuel in all parts of the township. There are no stone quarries. There are no minerals. Moose and bear were seen here besides duck, rabbits and coyotes.—*M. B. Weekes, D.L.S., 1904.*

Township 55.—This township is best reached from the west by means of the Saskatchewan, or by the trail on the north side of the river. It can be reached from the east by the trail which follows the proposed location of the Canadian Northern railway and a branch trail which runs north from it in range 5. The soil is fair on the average; consisting of about 8 inches of black soil on a clay or sand subsoil. If this township were cleared, it would be suitable for mixed farming. The surface is almost entirely covered with poplar mixed with heavy tangled willow scrub. The poplar will average about 5 inches in diameter. There is considerable good hay land on the north and west sides of Lake Louise. The water is all fresh, and the supply is permanent. There are no water powers. There were no summer frosts. Dry poplar for fuel can be procured in large quantities in any part of the township. There are no stone quarries or minerals. Bears, moose, deer and coyotes were seen.—*M. B. Weekes, D.L.S., 1904.*

Township 56.—This township is best reached from Edmonton by means of the Saskatchewan, or by means of the trail on the north side of the river, which runs along the government telegraph lines. This trail is in good condition. On the north side of the river the soil is light and sandy and is of very little value. South of the river it is better but it is all covered with a dense growth of poplar bush and scrub. On the north side of the river there is some open land, the balance being covered with poplar, scrub, and some spruce and jackpine. South of the river the surface is entirely covered with poplar bush mixed with willows. The poplar will average about 6 inches in diameter. Just south of the north boundary there is some spruce and jackpine, but not enough to be of any value except to settlers. There is no hay in this township. The water is all fresh. There are no water powers. There were no frosts after the end of May. Dry poplar for fuel is available in any part of the township. There are no stone quarries or minerals. Deer and moose were seen, also plenty of rabbits and coyotes.—*M. B. Weekes D.L.S., 1904.*

Township 57.—The St. Paul de Metis and Onion lake trail passes through this township. This is a very good road. The soil is chiefly sandy loam with clay subsoil and is suitable for general farming. The northern half is wooded with poplar from two to twelve inches in diameter, with small clumps of spruce scattered in a few spots especially in the northeast part. The southern half is scrub and brush. There is some good hay land in sections 5, 6 and 24. The water is all fresh and good. Moose creek is sometimes a very small stream, almost dry. At others it is a river eight to ten feet deep. The land is not liable to be flooded. There are no water powers. The climate is delightful. Summer frosts are rare. There is plenty of wood for fuel for settlers. We saw no valuable minerals of any kind. Among game animals there are

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many deer, moose, bear and foxes. Duck are numerous. There are partridge, geese and cranes in season.—*M. W. Hopkins, D.L.S., 1904.*

Township 58.—This township is best reached by means of the trail running from Indian reserve No. 123 to the St. Paul de Metis and Onion lake trail from the south, and from said Indian reserve from the north. Both roads are fairly good. This township is the chief centre of the Moose hills and is hilly and broken. The northern part would be good for general farming. In the remaining parts there is good pasturage along some of the streams. The ground is covered with poplar from four to twelve inches in diameter, except in the valleys along streams and in the northern tier of sections. Along the streams in places are found scattered spruce up to fifteen inches diameter. However, for a radius of half a mile around the northeast corner of section nine there are some very fine spruce and tamarac up to thirty inches diameter. There will be enough good timber here for the settlers, but if this were disposed of there is no more obtainable on the south side of Moose hills. There is no hay land in this township. The water is fresh and good and abundant. There are many nice streams, but no water power. This land will never be flooded. The climate is delightful. Summer frosts are rare. There is abundance of wood for fuel. We saw no valuable mineral of any kind. Among game there are many deer and moose and bear.—*M. W. Hopkins, D.L.S., 1904.*

Range 7.

Township 36.—This township may be reached from Battleford via Sounding lake trail, also from Medicine Hat or Wetaskiwin via trails used by the ranchers in this locality. The soil is generally a clay loam with clay subsoil, but a few sections are sandy. The surface is undulating and hilly throughout. There is no timber except two clumps of small poplar in section 28. The hay supply is limited, but may be got in small quantities in nearly all sections. Water, both fresh and alkaline, is abundant, the good water is found in small ponds and marshes. There are no streams of running water. Climatic conditions seem favourable, with no signs of summer frosts. The nearest fuel will be found in the Neutral hills in the township adjoining to the north. No coal or other minerals of economic value were seen nor any indications of minerals. There are boulders in places but no outcrop of bed rock. In game, we found duck, geese, prairie chicken, foxes and prairie wolves. The township is adapted for grazing land, but may also be applied to mixed farming.—*Thos. Fawcett, D.T.S., 1904.*

Township 37.—This township may be reached from Battleford by following Sounding lake trail, also from Medicine Hat to Wetaskiwin by following trails used by ranchers in the locality. The location survey of the G.T.P. Ry. lies 18 miles to the northeast. The soil generally is a clay loam with clay subsoil. The surface is very rough and broken, the greater part of the township being in the Neutral hills, which are broken by many deep ravines and precipitous ascents. There is some poplar timber in the ravines, but it is difficult of access. Trees seldom exceed 6 inches in diameter. A limited quantity of hay may be obtained near the middle of the township, where there is a depression through the hills. Water is good and fresh in the smaller ponds, but brackish in lakes covering any considerable area. There are no streams of flowing water. Climatic indications are favourable, there being no signs of summer frost. A limited quantity of wood for fuel can be cut in some of the ravines, also small poles for building and fence stakes. There is no coal deposit nor other minerals of economic value in sight. The only stone is found scattered over the hills in the form of boulders, both granite and limestone. Game consist of duck, geese, prairie chicken, foxes, wolves and jumping deer. The township is adapted for ranching or grazing purposes and is at present used as pasture land by ranchers in the vicinity.

The trail from Sounding lake crosses the township from east to west two miles from the south boundary.—*Thos. Fawcett, D.T.S., 1904.*

Township 40.—This township is accessible either from Battleford or Wetaskiwin, there being no great obstacles to prevent travel either way. The location survey of the G.T.P. Ry. passes through the township near the northeast corner. The soil is a clay loam underlaid with heavy clay, except the southeasterly sections where the soil is sand. The surface is undulating to hilly and in sections 1, 2, 12, 13, 11 and 14, is broken by clumps of poplar timber. The hay supply is about normal. What there is, is of good quality and found around ponds and marshy spots. The water is fairly good. One large lake in sections 25, 35 and 36 contains good water. The smaller ponds are always fresh. No injury from summer frosts was observed, but the climate seemed favourable. A limited supply of dry poplar for fuel is obtainable in the sections above mentioned as wooded, also house logs of small size. No indications of coal or of other minerals of value were seen or outcrop of useful rock. Some boulders are found near the westerly boundary of the township. Game consists of duck, geese, prairie chicken, wolves and foxes.—*Thos. Fawcett, D.T.S., 1904.*

Township 41.—This township may be reached either from the west with Wetaskiwin as a base, or from Battleford; being about equally distant from both places. The location survey of the G.T.P. Ry. runs diagonally across the township. The soil is a dark sandy or clay loam with clay subsoil, is very fertile and well adapted for all purposes of agriculture. The surface is mostly undulating prairie, but there are a few poplar bluffs and willow marshes. The best timber will be found in sections 17 and 18, where building logs reaching a diameter of 10 inches may be obtained. Some good hay marshes of small dimensions will afford a limited supply of forage. Water in small ponds and willow marshes is good and fresh, while larger lakes are alkaline. There are no streams of running water in the township. Climatic conditions seem favourable, there being no signs of summer frosts. Dry poplar for fuel will be obtainable for some time in the small bluffs, many of which are partly dead and dry. No indications of coal or of any other minerals of economic value were seen. There are few rolling stones and no outcrop of rock.—*Thos. Fawcett, D.T.S., 1904.*

Township 44.—This township is reached by means of Iron creek trail to Battle river in township 43, range 9, and thence across country. The trail is good as far as the river, but except in very low water the river cannot be forded. The surface is prairie with bluffs of poplar and scrub around the lakes. The soil is generally light, but some good sections are to be found in the southeastern portion, suitable for grain raising. The balance is suitable for grazing. Poplar to the size of eight inches in diameter is found in small quantities, while all the lakes in the south and west are surrounded with four-inch poplar. There is no timber except for settlers' use. The water is generally fresh in the smaller lakes and sloughs but alkaline in the larger lakes. Good water would be very scarce in a dry season. There are no streams or water powers. The climate is that of Saskatchewan, with no frosts noted in summer. Wood is the only fuel found in the township. There are no stone quarries nor minerals. Duck, geese, chicken and deer were seen in this township.—*C. C. Fairchild, D.L.S., 1904.*

Township 51.—The route for reaching this township is by trail from Whitford lake. This trail crosses the south end of the township. It is fairly good in dry seasons. The surface of this township is high rolling and hilly. The soil varies in depth from two inches to ten inches with subsoil of sand and gravel in the south, and clay in the north. The soil supports a very fine growth of grass. A large lake is situated on sections 8, 9, 10, 11, 17, 16, 15 and 14 and two smaller ones on sections 11, 12, 13 and 14. Vermilion river runs through a valley in the south portion of the township. In dry seasons it is a stream of about sixty or seventy feet wide, with a depth of from four to five feet. In the valley, or marshes, through which the river runs a large quantity of hay grows; in dry seasons this hay can be cut and would

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yield about two tons per acre; in wet seasons the valley is a wet marsh and hay cannot be saved. The river contains numerous jackfish and suckers. The water is fairly good. The climate is almost the same as at Edmonton. No summer frosts were observed till the end of August. No stone quarries were found. Boulders were found on the high land adjoining Vermilion valley and on several of the hill tops. No minerals of economic value were found. Game of all kinds is very scarce. A few ducks were seen on the lakes and ponds. I rate this township second and third class for agricultural purposes. The north side is suitable for mixed farming, the south for ranching and cattle raising. The located line of the Canadian Northern railway is about six or eight miles to the south. Water was found to be plentiful in the ponds and lakes and the quality was good. Timber for building small houses and stables, can be had in the north side of the township.—*Robert W. Lendrum, D.L.S., 1904.*

Township 52.—The route for reaching this township is by cart trail from Whitford lake or Vegreville, both trails are fairly passable. The soil is a dark brown loam of from two to ten inches in depth overlying a clay subsoil. The soil is suitable for the growth of wheat, oats, barley and hay. The surface is generally rolling and hilly, with an occasional flat between the hills. The surface is overgrown here and there with clumps of poplar, and willow scrub and poplar groves. The clumps or groves of poplar averaging four or five inches in diameter; but trees of eight or nine inches in diameter have been seen. There are several small sloughs and ponds. Three lakes large enough to be traversed were found, one on sections 1, 12, 11 and 13, another on sections 15 and 16, and another on the western boundary of the township, part on sections 6 and 7. No large areas of hay land were found; but hay in small quantities grows around many of the sloughs and ponds. On the north boundary of section 23 and the south of section 26 and on the east half of section 15 are large flats supporting a good growth of wild hay and vetches, which by drainage could be made good hay meadows. The water found in the lakes and ponds is a little alkaline, but not unpleasant to the taste; that found in the running creeks was good and sweet, and I think the supply would be permanent. No mill sites or waterfalls were observed, and no places suitable for making dams. The climate I found to be similar to that around Edmonton and no more liable to summer frosts than that place. The kind of fuel most readily available is poplar wood, of which there is a quantity sufficient to meet the demands of settlers for a few years. No veins or beds of lignite or other coal were discovered, and no stone quarries. Boulders are found on many of the hill tops. No deer of any description were seen. A few rabbits were observed. Prairie chickens are very scarce, but there are a few partridge and many ducks and pelicans on the lakes. This township is best suited for mixed farming, the soil supports a good growth of prairie grass, rendering it a good ranching township, if hay in sufficient quantities was grown to winter the stock.—*Robert W. Lendrum, D.L.S., 1904.*

Township 53.—This township is, for the greater part, timbered, with the exception of sections 1, 2, 3, 4, 10, 11, 12, 14, 13, 24 and 25, where the surface is prairie and bluffs. Poplar and large willow is the only kind of timber found here; the poplar averages in size from four to fifteen inches in diameter and can be used to build log cabins. The country is hilly and cut by ponds and sloughs; there are also seven small lakes. Hay is plentiful on sections 31, 32, 19, 20, 7, 8, 9, 14, 15, 22 and 23. The soil is composed of black loam, varying in depth from four to twenty inches, resting on a clay or sandy clay subsoil; it is very well adapted for farming purposes. Settlers will find in the southeast portion of the township good tracts of prairie. The northwest half is very hilly and thickly timbered. The water is fresh in every stream, lake, pond and slough and it is in such a large quantity, that I believe it must be permanent. A large brook crosses sections 2, 12, 13, 14, 23, 26, 35 and 34, 33 and 32,

flowing into Saskatchewan river. This stream had an average width of eighteen feet, and the water was six feet deep during the month of June, with a current of two miles an hour. There are no water powers and no stone quarries and no minerals of any description have been found. Though I have not travelled south of this township, I believe that it can easily be reached by the Vermilion wagon road. About three miles east of the mouth of Stony creek, there is a fairly good road also; partly opened by me and partly by hunters from St. Paul. This road goes from the river to the centre of this township. The best way to travel from Edmonton to this part of the country is by way of Saskatchewan river. Scows of all dimensions are built in Strathcona at Mr. Walter's mill. The climate appears to be good; settlers from St. Paul report that they succeed well in growing oats, barley, and potatoes. Summer frosts are not very frequent. I believe that when the country is well drained they will disappear altogether. The pasture is good; grass, mixed up with pea vines, grows abundantly on every tract of prairie and principally at the edges of bluffs. Prairie wolves, porcupine, foxes, muskrat, and a few deer are found. I have seen very few ducks, wild geese, partridge and prairie chicken in this township; wood for fuel is abundant all through the township.—*J. B. Saint Cyr, D.L.S., 1904.*

Township 54.—This township can be reached by a cart road opened by me from the south shore of Saskatchewan river about three miles east of Stony creek and passing through township 55, range 7, and crossing this township from section 36 to section 4, making a bend to the west to turn some marshes and lakes on sections 21, 22, 23 and 24. I believe that the Vermilion wagon road can also be reached in passing through the southeast corner of 53, range 7, as the country south appears to be mostly prairie. This township is very hilly and the surface is prairie and bluffs through the west and south portions, the remainder being covered with poplar varying from six to twelve inches in diameter and with large willow. Good poplar logs can be procured on almost every section and wood for fuel is also plentiful. The soil is a black loam varying in depth from five to twenty inches, resting on a sand or sandy clay subsoil. This township is well adapted for farming purposes; tracts of prairie are found on nearly every section. There are eleven lakes in this township. The principal one is Lake Côté. On sections 1, 2, 3, 6, 19, 30, 22, 27, 23 and 26, there are hay sloughs and marshes producing very good hay. The only stream worth mentioning is the outlet of Lake Côté and lake No. 10, flowing in a northwesterly direction; this stream has a current of two miles an hour; it is almost eighteen feet wide and was five feet deep during the month of July. There is a great number of ponds and sloughs scattered all through this township. They contain fresh water, as well as the lakes and streams, and the water seems to be permanent. The pasture is good and abundant here. There are no water powers nor stone quarries and no mineral has been seen during the progress of the work. Duck, wild geese and cranes seem to be plentiful during the summer and a good number of muskrat, prairie wolves and foxes have been seen here. The climate is fairly good and summer frosts are not very frequent. Settlers will find here all they need to meet their requirements.—*J. B. Saint Cyr, D.L.S., 1904.*

Township 55.—This township can easily be reached by Saskatchewan river, passing close to the northwest corner. From the south bank of the river, about three miles east of Stony creek, there is a wagon road entering the township on section 35. The surface here is thickly timbered with poplar, birch and large willow. Nevertheless there are here and there patches of prairie. There is a remarkable row of hills running nearly east and west from sections 7 and 18 to section 4, and from there turning to the northwest towards section 34. Some of these hills are two or three hundred feet high above the lakes and marshes at their foot; the hill on the east boundary of section 23, has an elevation of 310 feet. The soil in this township is well adapted for farming purposes, being a black loam five to fifteen inches deep, resting on a clay or sandy clay subsoil,

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stony in many places. A few spruce from four to fifteen inches in diameter are found in the neighbourhood of the lakes; they would prove useful to the settlers, coming to establish themselves here. There is a marsh on sections 10 and 11 producing a large quantity of good hay. The principal lakes in this township are lake No. 1, lake No. 2, lake No. 3 and lake No. 4, every one of them emptying into Death river. This stream in the spring time, had an average width of twenty-five feet, with a depth of four to five feet, the current being about three miles an hour. Fresh water is abundant in all the streams, lakes, sloughs and ponds in this township and it is permanent. There are no stone quarries; and no mineral of any description has been found here during the progress of the work. Game seems to abound here. Moose, bear and deer, rabbits, prairie wolves, foxes and muskrats have been seen in good numbers while surveying here. Duck of many species, wild geese and cranes are found in the numerous ponds and lakes during the summer. The country is hilly, but the slopes are long and rising gradually, and they may be cultivated as well as the flats adjoining the lakes and streams. The climate seems to be good, and summer frosts are not very frequent. Settlers will find here a good country and will succeed in growing oats, barley and vegetables.—*J. B. Saint Cyr, D.L.S., 1904.*

Township 56.—This township can be reached by way of Saskatchewan river, or by a wagon road, from St. Paul de Metis, crossing this township from the northwest corner to strike the river nearly in the centre of the township. There is also another road east of Stony creek and parallel to that stream, going to the river near the mouth of the said creek. The soil here is composed of black sandy loam having an average depth of fifteen inches, resting on a clay and sandy subsoil, it is a little stony on the hills. The surface is prairie and bluffs, for that portion situated on the north side of the river, while south of the Saskatchewan, it is thickly timbered with poplar, white birch and large willow. Small bluffs of spruce are found here and there along the river and the creeks. The trees are from six to fifteen inches in diameter. The poplar in the different bluffs north of the river is only fit for fuel. Saskatchewan river, crossing this township from section 6 to section 24, varies in width from ten to seventeen chains; it is about ten feet deep in the fall, with a current of nearly two miles an hour. In the month of June the water is much higher than it is at the present time (October). A large quantity of hay is furnished by the numerous marshes and sloughs in this township; prairie grass is also plentiful here. The water is fresh in all the ponds, lakes and streams and the supply is permanent. Atimoswe creek, Death river and Stony creek are the principal streams flowing into the Saskatchewan. Death river, with an average width of ten and fifteen feet, and a depth of four and five feet, has a very swift current on reaching the Saskatchewan. Atimoswe creek is about twenty feet wide and four feet deep; it runs in rapids to the river. Wood for fuel and for the construction of log cabins is plentiful here. There are no stone quarries and no mineral has been found during the survey. Prairie wolves, foxes, muskrats and rabbits are plentiful, and a large number of duck, wild geese, partridge and prairie chicken have been seen. The climate is fairly good and summer frosts are not very frequent. A few fresh tracks of bear, moose and deer were seen in different portions of this township. Pike and pickerel abound in the Saskatchewan. Though the west and south portion of this township is hilly, some good farms can be found here and there.—*J. B. Saint Cyr, D.L.S., 1904.*

Township 57.—The old and good trail from Edmonton to Battleford by way of Onion lake passes through the southern portion of this township. The soil is first class and good for general farming. The northern part of the township is covered with poplar from two to ten inches in diameter, with clumps here and there of same dimensions. The southern part of the township is covered with scrub and brush with some prairie, where Edmonton and Onion lake road passes. There is a little hay land in the prairie portion. The water is abundant and fresh. Dog creek enters the

township in section 19 and passes out in section 2. This creek never dries up and is large in time of flood, but the land is not liable to be flooded. There are no water powers. The climate is delightful and summer frosts are rare. There is plenty of wood for fuel. We saw no valuable mineral in this township. Among game animals there are deer, moose, bear, duck, prairie chicken, fox and partridge. The old Lac LaBiche trail passes over sections 34 and 24, but is now grown up.—*M. W. Hopkins, D.L.S., 1904.*

Township 58.—This township is most conveniently reached by way of the old Lac LaBiche trail, which forks off from the St. Paul de Metis and Onion lake trail near the east boundary of range 7. The old Lac LaBiche trail is now grown up, but we cut it open into this township and the road is now good. The soil is chiefly loam with clay subsoil and suitable for general farming, and covered with poplar from two to eight inches in diameter. The southern part of the township is more scrubby. Around the east side of Bently lake there is some good spruce and tamarac, but not enough for a timber berth. There are no hay lands. All water is fresh and good and there will be plenty for use. There are no large streams, but numerous small ones. The land is not liable to be flooded. There are no water powers. The climate is delightful. Summer frosts are rare. There is abundance of wood for fuel. We saw no coal, nor lignite, nor stone quarries or other valuable minerals. Among the different kinds of game there is an abundance of duck, many deer and moose and some bear. There are wild geese in season and partridge. There are plenty of fish in Keheewin lake and probably in the other lakes.—*M. W. Hopkins, D.L.S., 1904.*

Range 8.

Township 36.—There are trails by which this township may be reached from Medicine Hat from Wetaskiwin and from Battleford. A trail from Sounding lake passes through this township, running south to Medicine Hat. The soil is a clay loam over a heavy clay subsoil. The westerly half of the township is gently undulating prairie, while the east part is very hilly and broken. There is no timber in the township, but fuel may be obtained in the township adjoining to the north from Neutral hills. A limited supply of good hay may be obtained from all parts of the township, but no large area of hay land exists. There is plenty of good water to be found in small deep ponds usually fringed with willow scrub, but there are no streams of running water during the dry part of the season. No marks of summer frost were visible and the vegetation would indicate a favourable climate. No coal or other minerals of economic value were in sight. Game consists principally of duck, geese, prairie chicken, foxes, wolves and small deer. The township is adapted for either grazing or mixed farming.—*Thos. Fawcett, D.T.S., 1904.*

Township 42.—The best and most convenient point, from present railway facilities, to reach this township is Lacombe, on the Calgary and Edmonton branch of the Canadian Pacific railway. Leaving Lacombe by the trail leading due east and passing by way of Content at the mouth of Tail creek and on, still travelling nearly due east, and passing McVittie's place on Beaverdam creek, then on to Nelson's place in township 39, range 11, and from there taking the new trail made by freighters for railway survey parties in 1903 and 1904, going northeasterly from Nelson's the vicinity of the southwest angle of this township is reached in about twenty-two miles therefrom. The trail is nowhere good, but is passable. This is not a good township in an agricultural sense as a whole. About one-third of its area only is good land. This good land lies in a strip about one and one-half miles wide from the southeast to the northwest corner, and the soil found in this strip is very good, being of sand and clay loams, with very few stones. The soil elsewhere in the township is very light and sandy. The good soil spoken of, is in every way suited to produce all ordinary

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farm products grown in Canada. The surface is mostly of a rolling character, with a good many small patches of poplar and willow bush distributed about. Some few patches of fair sized poplar are found here and there. On sections 9, 17 and 18 considerable timber (poplar) of a size suitable for building logs exists, with a large quantity of firewood and fence rails. It might be well to reserve what there is of these sections not covered by lakes for settlers' needs. There is no timber suitable for lumbering operations in this township. A good deal of natural hay could be got at places about the group of lakes in the southern part, and also a large quantity could be got on sections 25, 26, 35 and 36, where some quite extensive hay flats exist. A thousand tons might easily be cut on this last mentioned part, I fancy. This hay grass is a kind of red top of fine quality, and is generally about three feet in length, and would cut from one and one-half to two tons per acre. The water in the township is not good as a rule. Only in the smallest ponds and marshes is it at all possible to use. Of course all of it is quite good for stock. There are no streams in the township, and of course no places at which power by water can be obtained. I did not see any indications of valuable minerals, or of coal or lignite, nor are there any places that I saw at which quarries for stone might be opened. Of game, duck and geese were abundant in the lakes, and prairie chicken and partridge were also frequently seen. I do not think any of the lakes, though they are of quite a size, contain any fish. Many attempts to capture some were made, but with no success.—*Fred W. Wilkins, D.T.S., 1904.*

Township 43.—This township may be best reached perhaps by using Lacombe as a starting point from the railway, and by taking the trail due east from this point, passing by way of the village of Content at the mouth of Tail creek, then easterly and finally following the freighting trail used last year and this to bring in supplies to the railway survey parties between Lacombe and Battleford, until the vicinity of the southwest angle of township 42, range 8, is reached, thence northerly across country until this township is reached. This trail is not a good one anywhere, but it is passable though there are a few very bad places along it, notably the places known as 'The Devil's Ash Pan' and 'Hell on the Wabash.' The surface of the township is from rolling to hilly in character, and is mostly open, that is free from timbered growth. A few clumps of small poplar and willow bush are found here and there on the township, but are of no consequence one way or the other, except that a little fuel is to be obtained in some of them. The soil is almost invariably a shallow sand loam on sand, and with the exception of a small patch in the southwest corner, is a light soil throughout. With an abundant rainfall and good husbandry, good crops of any of the farm products grown in Canada could be raised over a considerable part of the township, but of the first condition there is great doubt, and therefore I do not consider the township a good or even passable, one for general farming. As a summer range for stock, especially horses or sheep, is, I fancy, its best purpose, as there is a sufficiency of water, and, the grass is of very fair growth. It is, however, very liable to prairie fires, as the grass matures very early in the season, and is then very dry. There is no timber on the township of economic value. There are no large hay meadows, but in the southeastern part of the township and at the central part, some nice hay flats were seen, the prevailing grass being a species of red top, which would easily run about two tons to the acre of most excellent hay. I should fancy that I saw sufficient to cut about 1,000 tons taking all that I came across in the township. There are no running streams in the township except Battle river in the extreme northwest (almost inaccessible) and two spring brooks running into it at that point. Possibly a dam might be put in on the river to develop power, but it would be an expensive piece of work. The discharge of this stream at its lowest stage is about 400 cubic feet per second; and, at the highest is about 4,000. A possible head of ten or twelve feet might be obtained. The water throughout the township is fairly good and fresh. The water in Battle river, however, is peculiar in

that it does not taste bad, but creates an unconquerable thirst, and, if it be used to make tea with, is absolutely undrinkable. Of mineral fuel of any kind I saw no trace, nor of any other valuable minerals. I did not notice any places suitable for stone quarries. There is a limited quantity of poplar wood for fuel to be found in small patches scattered over the township. The supply is not large however. Of game, there are plenty of ducks in the ponds and marshes. Prairie chickens were not numerous, nor were partridge. A few rabbits were noticed in the bush. A good many antelope were seen, and, though we did not see any living ones, the cast horns, and other remains of the red deer (*Wawaskeshn*) sometimes called elk, were seen in abundance. Tracks of bear were also seen along Battle river. Pike are abundant in this stream, of good size (6 to 10 lb.) and of very fair gastronomic consideration.—*Fred. W. Wilkins, D.T.S., 1904.*

Township 51.—The route for reaching this township is by trail from Whitford lake. This crosses the southerly portion of the township. It is fairly good in dry weather. The surface of the township is mostly high, rolling and hilly. The soil varies in depth from two to ten inches. The subsoil is sand in the south along Vermilion river, and clay to the north. The soil supports a good growth of grass and is very well suited for cattle grazing. Here and there, are patches of low scrub, poplar and willow, and clumps of poplar large enough for fencing and fuel. There are no spruce trees, or poplars large enough for sawn lumber. Vermilion river crosses the south end; in its valley are marshes where a large quantity of hay can be cut in dry seasons when the water is low. The river is a very crooked stream. In summer its depth is about three feet, with a current of about a mile an hour. The water is a little alkaline and contains numerous jackfish and suckers. In width it varies from one chain to ten, according to the height of water. There are no mill sites upon it and no great chance of making dams. The climate is almost the same as at Edmonton. I observed no summer frosts this year till about the end of August. No stone quarries were found, boulders are numerous on the high land adjoining the Vermilion valley. I found no minerals of any economic value. Game of all kinds is very scarce. A few ducks were seen on the lakes and ponds, partridge and prairie chicken were very scarce. I rate this township as second and third class for agricultural purposes. I found no actual settlers in this township at the time of survey. The north part is fairly good and suitable for mixed farming and ranching. Water is plentiful and the supply I think would be permanent. Timber for building log houses and fencing, &c., can be had in the north end of this township. The located line of railway is about eight miles to the south, and contractors are busy making the railways towards Edmonton.—*Robert W. Lendrum, D.L.S., 1904.*

Township 53.—This township is all bush with the exception of a few small pieces of prairie adjoining the north boundary of the township. The timber is black and white poplar and large willow. Windfalls are met with all through this township with a growth of small poplar and willow in them. Most of the timber found here is only fit for fuel, it being rotten in the centre. The land in this township is rolling with the exception of the north portion, where it is hilly. The principal lakes are Lake Emilien and Lake Hivon. There is a great number of sloughs and ponds. The soil is composed of black sandy loam of a depth varying from four to fifteen inches, resting on a sandy or sandy clay subsoil. The pasture is not very good in the few openings found here. I have cut a road from section 25 to section 29 and from there going close to the west outline of the township and reaching Lake Emilien on section 9. The outlet of Lake Hivon, flowing into Lake No. 1, is the only stream in township 53, range 8; this stream has an average width of six feet with a depth of two feet and a current of one and a half miles an hour. Hay marshes are found in the neighbourhood of the lakes of this township and on the north boundary of section 35. Fresh water is abundant and permanent; there are no water powers and no stone quarries, and no mineral

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of any description. Game is not very plentiful; a few deer and wolves, rabbits and muskrats are about all that have been seen; duck are not plentiful during the summer season. The climate is the same as in the neighbouring townships—fairly good.—*J. B. Saint Cyr, D.L.S., 1904.*

Township 54.—This township is hilly through the northeast and south portions, and rolling in the centre and adjoining the west boundary. Some good tracts of prairie are found here and there. Thick bluffs of poplar and large willow cover nearly half of the township. The poplar varies from four to twelve inches in diameter; logs can be procured here and there to build log cabins, but most of the timber is rotten in the centre. There is a great number of sloughs, ponds and muskegs and very few hay marshes. They are found on sections 8, 9, 20, 21, 25 and 32. Hay is inferior in quality to that of the neighbouring township. The soil is a black sandy loam from four to fifteen inches deep, resting on a sandy or sandy clay subsoil. On the hills the soil is very light and sandy. Through the centre and the western part of the township stones and gravel are found in the ground at a depth of six or eight inches. Lake No. 6 and Lake No. 5 are the two principal sheets of water, close to the centre of the township and emptying into a stream running in a northwesterly direction; this stream has an average width of eight feet, and was two feet deep, at the time of the survey in October, with a current of two miles an hour. This township can be reached by passing through township 54 and 53, range 7, where the prairie seems to extend as far as Vermilion river, where there is a wagon road; or by township 55, range 7, where there is a wagon road reaching Saskatchewan river. Rabbits, muskrat, prairie wolves, a few foxes and deer are about all the game seen here, with also a few partridge and prairie chicken. Good pasture is found on nearly every tract of prairie here. Settlers will certainly succeed to a certain extent in growing oats, barley and potatoes. Summer frosts are not very frequent. There are no stone quarries or water power, and no mineral of any description has been seen.—*J. B. Saint Cyr, D.L.S., 1904.*

Township 55.—This township can be reached by way of Saskatchewan river or by the St. Paul wagon trail crossing this township from north to south. The river can easily be forded at low water at the foot of Fort island. The hill on the south side is long and steep in many places. The surface in this township is mostly bush. Pieces of prairie of medium size are found here and there. The timber is poplar, willow and white birch, with a few spruce near the lakes and river. Saskatchewan river crosses this township from section 18 to section 36; it is bordered on each side by high hills varying from seventy feet to two hundred and twenty feet in height. The principal lakes in this township are Lake Eliza, lake No. 8, lake No. 7 and lake No. 4. Outside the hills adjoining the river the country is also hilly through sections 4, 9 and 10 and in the vicinity of Lake Eliza. The soil appears to be a light sandy loam, stony and gravelly on the heights. Hay is not very plentiful in this township. Good water is found in all the lakes and streams; it is permanent. There are no water powers nor stone quarries; and no minerals of any description have been found in this township. Muskrat, wolves and rabbits are plentiful, but I have seen very few partridge and prairie chicken. The Saskatchewan abounds in summer time with fish of different kinds. Wood for fuel can be procured on every section of this township. I was told by Messrs. Ashworth and Craven, who live in this township, that the climate is good and that summer frosts are not very frequent. Taken as a whole the greater portion of this township is more adapted for ranching than farming. Nevertheless some good farms can be found in the neighbourhood of the different lakes and close to the correction line.—*J. B. Saint Cyr, D.L.S., 1904.*

Township 56.—The north, east and west portions of this township are thickly timbered with poplar and willow, while the centre is prairie and bluffs. The soil, though a little light, appears to be very fertile as the grass in the different pieces of

prairie is long and thick, mixed up with pea vines. This township is very hilly and will prove to be a good ranching country; it is dotted with lakes, ponds and sloughs. Hay is plentiful in the different sloughs and marshes, and also near the lakes. Good water is abundant and permanent here. This township can be reached by the St. Paul wagon trail, crossing the southwest corner of the township. This road is somewhat hilly, nearly all through. The principal lakes are lake No. 1, at the northwest corner of the township, lake No 6 (both are surrounded by thick bush and windfall) and Stony lake. The largest stream is Stony creek and the outlet of lake No. 1 flowing into Stony lake. Stony creek runs into Saskatchewan river. There are no water powers nor stone quarries, and no minerals have been seen here during the progress of the work. Wood for fuel is plentiful. Prairie wolves, muskrat, rabbits, with a few partridge, is the only game seen here. Pike of good size abound in Stony lake. The climate is fairly good and summer frosts are not very plentiful.—*J. B. Saint Cyr, D.L.S., 1904.*

Township 57.—The Edmonton and Onion lake trail enters the township in section 30 and passes out at section 13. This is a very good road. The soil is first class and suitable for general farming. The west half of this township is covered with poplar up to twelve inches in diameter with clumps of similar size spruce here and there. The east half is chiefly scrub and brush. There is no hay land. The water is fresh and abundant. Dog creek enters at section 36 and passes out at section 24. This creek never dries up and is large and eight feet deep in time of flood. The land is not liable to be flooded. There are no water powers. The climate is delightful and summer frosts are rare. There is plenty of wood for fuel in the township. We found no valuable mineral. Among game animals are to be found deer, fox, moose, bear, duck and partridge.—*M. W. Hopkins, D.L.S., 1904.*

Township 58.—This township is easily reached from the St. Paul de Metis and Onion lake trail which passes just south of it. The soil is loam with clay subsoil, and is very good and suitable for general farming. The surface is covered with scrub, with clumps of poplar and small spruce. Northeast of Bently lake, however, the trees are larger and there is some good spruce up to fifteen or twenty inches diameter. There is some good hay land around lake No. 15, but not much. The water is all fresh and good. Dog creek runs across this township in a southeasterly direction. It is sometimes a small stream four feet wide and six inches deep. At others it is eight feet deep and thirty feet wide. The land is not liable to be flooded. There are no water powers. The climate is delightful and summer frosts are rare. There is plenty of wood for fuel. We saw no valuable minerals of any kind. Among game animals there are deer, moose, bear and fox. There are plenty of duck to supply food in season, also prairie chicken, partridge, geese and cranes.—*M. W. Hopkins, D.L.S., 1904.*

Range 9.

Township 22.—This township can be most easily reached from Tilley, a station on the main line of the Canadian Pacific railway. From this place a good trail leads directly to it. The soil generally on the high lands is sandy loam and clay subsoil with clay loam occurring frequently, and is best adapted to ranching. Along Red Deer river on the north side through sections 17, 18 and 19 it is very much broken with willow swamps and old river beds for ten or fifteen chains back; this part evidently being flooded at high water to the depth of two or three feet. The rest of the valley is so much broken with hills and ditches that it is impossible to drive a vehicle down the valley on either side of the river. The valley on sections 18 and 19 is one and one-half miles wide extending from the northeast corner of section 19 south to the quarter section corner on the east boundary of section 18. On the north boundary of section 8 it narrows to about one-half mile, being all on the south side of the river. Then across

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section 4 the valley gradually opens to three-quarters of a mile, and nearly all on the north side of the river. On the east boundary of section 3 the valley closes in again to one-half mile, with the river in the middle, and from this line the valley continues to be about the same width the rest of the way through the township. The hills on both sides of the river are about four hundred feet high; four hundred and forty was the highest read by aneroid barometer. They are always very steep and in many places become cut banks. In the ravines are found narrow strips of very thorny scrub. There are no trees that can be classed as timber, excepting about ten acres of black poplar on the south end of the island on section 24. Hay is scarce, it is not in sufficient quantity to be worth locating but is only scattered over the higher prairie lands in very small patches. Besides Red Deer river there is water to be found in numerous ponds scattered over the prairie, and occasional springs in the ravines—all of which is fresh water. There are no water powers at all. The climate was warm and pleasant with no appearance of summer frosts. The settlers are depending entirely upon drift wood for fuel. I saw no indications of coal or lignite. Stone quarries might be opened on the southwest quarter of section 13 and the southeast quarter of section 17, where freestone is found. I saw no indications of any minerals of economic value in this township. Antelope are very plentiful everywhere and prairie chicken in the valley. Wild duck and geese breed along the river.—*John J. Dalton, D.T.S., 1904.*

Township 39 (north two-thirds).—This portion of this township is as a rule hilly, some of it very much so, with great numbers of small marshes and ponds and a good many small lakes or lakelets. About one-tenth of its surface as a whole is occupied by a wooded growth consisting largely of willows and small poplar bush, with here and there a small grove of poplar trees, the largest of which might perhaps reach a diameter of 12 inches at the stump. There is not a large quantity of this large timber in the township. The soil (a clay loam in general) is good and well suited to raise all ordinary farm crops grown in Canada. There are no large hay meadows, though a good deal of hay can be obtained in small patches. There are no running streams in the township, and the water found in the lakes is more or less saline and alkaline and not good to use. In most of the marshes or sloughs, however, it is soft and fit for use. I should judge that there is at all times plenty of water for every need of the settler, who purposes to engage in mixed farming. There is no likelihood of flooding that I saw. There are no places where water power could be developed. I did not see any indications of summer frosts. From what I saw I do not think that the rainfall is large. There is at present an abundance of dry poplar for fuel, lying down all through the clumps and patches of the wooded growth before mentioned. I saw no indications of coal or lignite, nor of any other economic mineral. I saw no place at which it would seem likely stone quarries might be opened. On the tops of a great many of the hills surface stones (boulders) of Laurentian origin, were observed partly imbedded in the soil. Game, rabbits, partridge and pintailed grouse were fairly abundant with great numbers of wild ducks of several kinds. Muskrats were extremely abundant in ponds and marshes. Prairie wolves (coyotes) were constantly seen, and a few deer of a kind unknown to me, but of good size. In this township a good many nice farms, fairly easy to work, despite the hilliness could be gotten but this would involve a good deal of bush and brush cleaning, and the fields would of course be small and irregular in shape. The insect pests, such as black flies, mosquitoes and bulldogs, were numerous beyond compare, and as vicious as they were numerous. Lacombe is at present the nearest and easiest place of note to this locality, and from it a wagon trail by way of Content at the mouth of Tail creek, leads across the northwest corner of the township. This trail for a good part of the way east of Content was made last year by men freighting in supplies to railway survey parties between Lacombe and Battleford.—*Fred. W. Wilkins, D.T.S., 1904.*

Township 42.—By reason of the intervention of Battle river, an almost impassable stream at all seasons, Lacombe, on the Calgary and Edmonton line, is the best place of departure from present railway lines from which to reach this township. By taking the trail due east from this place and going by way of Pleasant Valley and Content, at the mouth of Tail creek, thence east through the Swiss settlement and beyond and following the trail used in taking in supplies to railway survey parties, this year and last, past Nelson's place thence northeasterly, the vicinity of the southeast corner will be reached about twenty-five miles from Nelson's, a distance of about, by trail, one hundred and forty miles from the starting point, Lacombe. The soil in this township varies from a light sand to a most excellent clay loam on clay subsoil, the greater part of the township being clay loam. In the central part of this township is a tract of about seven thousand acres in extent, that as a general farming country is not excelled by any in the Northwest. Plenty of good water, plenty of wood, rolling land, clay loam soil, good grass, &c., &c. In fact everything the settler going in for mixed farming could desire. The balance of the township is more suited for grazing and as a range for stock. The grasses found are good, with a great deal of [pea-vine and vetches in many places. About one-tenth of the township as a whole is covered with a timbered growth, the balance being grass land, and ready for the plough at any time. This timbered growth consists, for the most part of young poplar and willows. With the exception of a few large balm of Gilead and white poplar found near Battle river along the west boundary of the township the wooded growth appears to be of not more than fifteen years' existence. In a number of places I noticed large quantities of dry poplar, twelve to fifteen inches in diameter, lying down among the young growth just spoken of, evidently the work of fires about twenty years ago. From this a very fair supply of fuel of excellent quality is to be obtained at the present time. In settlement, some clearing will probably be found desirable to get fields in regular shape, and, if the present existing groves of young trees are left to grow on, and fires are kept away, in a few years time every section will produce sufficient fuel of itself for future needs. There are no large hay meadows, but ample wild hay for ordinary settlement can be cut almost everywhere. In the marshes and sloughs the water is usually good and soft, but in ponds and lakes it is saline in character. I saw no traces of any useful minerals, or of coal or lignite, nor any places where stone quarries might be opened. As to water powers, Battle river runs along the western boundary of the township and could be dammed for the purpose in many places. Near the northwest angle of the township is a place where a dam could be put in across the valley of this stream, where a head of thirty or forty feet might be had, and in this way a very considerable power might be obtained. This work would be expensive, as such a dam would be one-half mile in length probably. The flow of the river, which averages from three to six feet in depth in ordinary times and ten feet more in high water, is about four hundred cubic feet per second in the lowest stage, and at the highest is probably four thousand. The valley of this river is about one mile wide from the top of one bank to the other with a general depth of from two hundred and fifty to three hundred and thirty feet. The bottom lands along the stream are generally of little value, being of light soil as a rule, and also very swampy, with a great deal of useless willow and alder brush, and practically no large timber. Of large game, tracks of deer were often seen, as also tracks of bear. Rabbits were very plentiful, with abundance of waterfowl, such as duck, &c. Partridge and prairie chicken were fairly abundant. Of fur-bearing animals, coyotes were very numerous, and in the ponds and rivers great numbers of muskrat were seen, also along the river a number of beaver colonies were observed, one of which I estimated contained two hundred members at least. One beaver house which I saw measured twenty-five feet across, being built of logs braced against the bank, which in this place was about fifteen feet high. Pike, and pickerel (doré) are found in Battle river, and are of good

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size and fat as well. I saw no indications of summer frosts, and the condition of the soil indicated a good rainfall for this season at least.—*Fred W. Wilkins, D.T.S., 1904.*

Township 43.—This township is reached by a good trail from Wetaskiwin called Iron creek trail. The soil is generally good, but owing to the hilly nature of the surface, is adapted for grazing rather than grain. The surface is prairie with scrub and some fair-sized cottonwood along Battle river, some of the trees reaching 12 inches in diameter; but the trees are scattered. There is probably a thousand acres of hay in sections 16, 21 and 22. The quality is very good. The water is fresh and a sufficient and permanent supply is found in Battle river and Iron creek. Battle river averages two chains in width by four feet in depth in September, but was much deeper earlier in the season. Iron creek averages about 20 feet in width by 2 feet in depth. Neither stream exceeds two miles per hour in low water, although there are some small rapids in both. There is little apparent danger from flooding. A small water power could be developed where Iron creek runs into Battle river valley, by means of a dam. The climate is good, no summer frosts being observed. Wood is available along the river, both growing and driftwood. No coal, lignite, stone quarries or economic minerals were seen in the township. Black bear, deer, duck, geese and prairie chicken were seen in the township. The township is very hilly, except a flat in the valley of the river at the junction of Iron creek.—*C. C. Fairchild, D.L.S., 1904.*

Township 53.—The surface of this township is generally undulating. The loam varies in depth from six inches to eighteen inches on a clay or sandy clay subsoil. The land is covered for the greater part with poplar. Here and there it is partly burned, and on the burned part is a second growth of poplar or willow scrub. A chain of lakes connected by a creek runs across the township from the southeast corner to the northwest corner. The great trouble with this township is the difficulty in getting into it in a wet season. There is no trail, and the land is liable to get very soft with just a little rain. There are no minerals, no stone quarries and no water powers. Wolves are plentiful.—*A. Michaud, D.L.S., 1904.*

Township 54.—The south half of this township is undulating and is almost all first-class land; the soil is a rich black clay or sandy loam with a good clay or sandy clay subsoil. Good water is abundant, and in dry seasons will be easily obtained by digging to a depth of three to four feet. A large hay swamp covers a good portion of sections 19, 20, 17, 16, 9, 10, 11 and 12; a creek runs through it, and will afford an easy means of draining that swamp. The north half is rough and hilly, and broken by numerous ponds and muskegs. The land is also first class. The growth of pea vine is especially rich. A trail from Vermilion river just stops on the northwest quarter of section 19. There are no minerals, no stone quarries and no water powers. There are a few bear, moose and deer.—*A. Michaud, D.L.S., 1904.*

Township 55.—Saskatchewan river crosses this township, flowing from section 18 to section 13, in a deep valley from twelve to fifteen chains wide, which is entered by several ravines. The banks of the river are from two hundred and fifty to three hundred feet high. North and south of the river this township is mostly rolling, rough and hilly. Nearly the whole of this township is covered with three-inch to four-inch poplar. There are also large tracts of dead timber and windfall grown up with small poplar and willows. On the sections adjoining the river on both sides, poplar and spruce are found of a diameter of from four to twelve inches. The soil is a second class clay loam on a subsoil of clay or sandy clay. All over the township the roughness of the surface is unfavourable to agriculture. There are no water powers and no stone quarries. Gold washing on the river paid well a few years ago. Small game, such as partridge and duck are plentiful; there are also a few bear and moose.—*A. Michaud, D.L.S., 1904.*

Township 56.—The whole of this township is covered with timber from three inches to eight inches in diameter, but which is of no commercial value, though there

are some scattered large spruce and poplar. There are also large tracts of dead timber and windfall, grown up with small poplar and willows. The soil is second and third class, and is in no place well adapted for farming. There are several lakes, muskegs, spruce and tamarac swamps scattered over the township. The water in the lakes, with the exception of Eliza lake, is very good. The surface of the township is mostly rolling. A good trail crosses sections 18, 7, 8, 5 and 4, a timber trail crosses sections 34, 35, 27, 26, 25 and 24, but is very rough. Fish, such as pike and pickerel are found in lake No. 1. There are no minerals, no water powers, nor stone quarries. We noticed many tracks of moose, deer and bear.—*A. Michaud, D.L.S., 1904.*

Range 10.

Township 39.—This township is best reached from Lacombe, a good town to outfit at, on the Calgary and Edmonton railway. Leaving Lacombe by the road leading due east at first, and then to south of east, and so on, but generally in an easterly direction, and passing the settlement known as Pleasant valley and on through the village of Content, at the mouth of Tail creek, and still on easterly through the Swiss settlement, and on past Sullivan lake (the lake is just visible to the south), and following Ribstone creek trail past McVittie's place on Beaverdam creek, and on past Young's place and on to Nelson & Rich's place on Nelson creek. At this place the trail forks, the main trail to Ribstone creek turning to the southeast, the other fork—being a new trail made by men freighting in supplies to railway survey parties, turning to the northeast. The township is reached in about three miles on either trail from Nelson creek, the main trail passing close to the iron corner post at the southwest angle of the township, while the fork enters about one-half way up its western boundary, the distance being about one hundred and fifteen miles from the starting point. The trail is not a good one anywhere but is passable and, of course, will constantly improve as settlement advances. The soil is excellent over the whole township, being mostly black loam and clay loam, with clay subsoil, and is in every way suitable to produce all ordinary farm crops raised in Canada. The surface of the ground in the southerly part is rolling, gradually getting into heavily rolling to hilly country in the north, and is about one-fifth covered with clumps of small poplar trees and willow bushes, the country being park-like in character. This wooded growth does not furnish anything that could be called timber, but there is a large supply of firewood, fence rails and posts, together with a considerable quantity of building logs almost everywhere. There are no large meadows in which hay could be cut in large quantities, but almost everywhere a good bit of upland hay can be had of good quality, quite sufficient for early settlement needs. At the time I was in the township, water, good water, was only too plentiful, the many hollows being full, but I believe that by the end of the summer a great deal of this water is dried up. In any event, however, I am satisfied the supply of water is sufficient both for household use and for stock, and can be taken as about one-half bad, and the other half good in quality. Battle river is the only stream in the township, and is found in the extreme northwest part passing through sections 31 and 32, near the northern boundaries. This stream is, of course, a permanent one, with a minimum discharge of about four hundred cubic feet per second, and a maximum of perhaps ten times this. The water in it is not of a bad flavour, but is bad to take, as thirst is only aggravated by its use. Tea made with it is absolutely undrinkable. As to water powers, this stream could be dammed between its banks in one place that I saw at least, and most likely in other places also, where a head of from twelve to fourteen feet might be had. Also the whole valley in which it flows (being depressed about three hundred feet below the general level) could be dammed across, and a head of almost any desired height be got up to say three hundred feet. As there are no rapids or falls of any consequence along the river there could not be many dams put in along it. The

grade of the bed of the river is about five inches per one thousand feet, as near as I could roughly estimate. There is no appearance of likelihood of flooding by water of any of the land in this township. I saw no signs of summer frosts. I believe that the rainfall is light. I did not see anything to indicate beds of coal or lignite, nor did I see or discover signs of any other valuable mineral. There is an abundance of wood (poplar) for fuel everywhere in the township. I saw no place at which in my judgment stone quarries could be opened, nor for that matter anything that I could identify as useful rock at all. I did not see any large game, but I believe that deer inhabit this district. Of small game large numbers of duck were seen, and a good many prairie chicken and some partridge were observed and great numbers of rabbits were also seen hopping about in the brush. Of fur bearing animals coyotes seemed numerous, and muskrat were plentiful in every pond or marsh.—*Fred. W. Wilkins, D.T.S., 1904.*

Township 40.—From present railway communication this township, seeing that it is divided into two parts by Battle river, an almost insurmountable natural barrier to travel, may best be reached for the northerly and westerly parts from Wetaskiwin on the Calgary and Edmonton branch of the Canadian Pacific railway, the trail from which place, I am told, is good, and the distance about one hundred and twenty miles. That portion to the south and east of Battle river is best reached from Lacombe, also on the Calgary and Edmonton line, and about the same distance, as from Wetaskiwin. Going out from Lacombe by the trail leading due east, and passing the village of Content at the mouth of Tail creek and straight on due east almost, through the Swiss settlement and on past McVittie's on Beaver dam creek, and farther on to Nelson's place and from there out about ten miles following the new trail made for supplying railway survey parties at work between here and Battleford, and leading to the northeast, thence due north two miles and the vicinity of the southeast corner of the township is reached. The trail is nowhere good, but is passable. The soil throughout the township is very good, with of course some little exception, such as sandy along the river and some saline land. In general the soil is clay loam with clay subsoil, and is in every way suited for the growth of ordinary farm products, such as grain and roots, &c., grown in Canada. In the westerly part, north of the river, there is a tract of about seven thousand acres of excellent land with rolling surface, with scattered clumps of brush and young poplar and plenty of fairly good water. This is the best part of the township. In the southeast also is a tract on the south side of the river of about two thousand acres of very good land, very similar in every way to that before mentioned. The balance of the township is very much broken, very hilly and with a good deal of stony ground. About five thousand acres lie in the gorge of Battle river, which is here depressed below the general level about three hundred feet, and is so broken and inaccessible as to be of little value. There is no quantity of timber suitable for lumbering operations, but along the river there are a few nice groves of poplar and balm of Gilead trees of fair size, from which a good many building logs can be got, if a way to get them up the steep bank of the gorge can be found. There are no large hay meadows that I saw, but a good deal of hay in small patches, can be cut all over the township, the quality of which is no doubt good. As to water, that in the lakes and large ponds is bad, but in the sloughs there is an abundance, mostly soft and good. The supply of water seems permanent. The water in Battle river is drinkable, but is bad to take, increasing thirst, instead of quenching it. The only stream in the township is Battle river, with a discharge, in low water, of about four hundred cubic feet per second, and, at high water perhaps four thousand. There are no falls or rapids of any consequence found along this stream, but there are places where it could be dammed between its banks, where a head of from ten to fifteen feet might be had and, thus a nice small power be obtained. Of course dams could be put in right across its valley, say one-half to three-quarters of a mile in length, and any desired head up to three hundred feet be obtained. This would,

however, cost large sums of money, but a very considerable power could be developed. As to fuel, wood, poplar principally, is the only kind I saw, and a good deal is scattered over the township in the clumps before spoken of. I saw no useful minerals nor indications of coal or lignite. As to stone quarries in sections 11, 12 and 13, something of the kind might be found. At places along the bank of the river gorge it would seem that a soft sandy and clayey rock crops out, of cretaceous age. I did not see any of it hard enough for building purposes, but fancy prospecting would find the right thing. Game was very plentiful, both large and small. We constantly saw deer of a large kind, that would dress fully two hundred and fifty pounds, and there seemed also to be a smaller kind. Rabbits were countless in the bush along the river, and duck abundant in every marsh we came to. I saw no indication of summer frosts. Would judge the rainfall to be light.—*Fred. W. Wilkins, D.T.S., 1904.*

Township 43.—Iron creek trail, usually in good condition, runs from Wetaskiwin through this township. The soil north of Iron creek is generally a good loam, suitable for grain growing, while south of the creek it is lighter and for the most part only fit for ranching. The surface is generally prairie, with some fair-sized timber in the southwest portion. Some poplar trees reaching a diameter of 12 inches are found along the south boundaries of sections 4 and 3, probably 5 acres in all. The other timber in the township is small and of little use. Hay is found along the small stream in sections 3 and 10. About 100 tons were cut here in 1904 of slough grass. There is plenty of fresh water in the creeks, but the lakes are generally alkaline. Iron creek averages 20 feet in width and 4 feet deep with a slow current. There is no danger of flooding. There is no chance for water power either by dams or otherwise. The climate is good, no summer frosts were observed. Wood is the only fuel available and may be obtained in the vicinity. There are no coal or lignite veins in the township. There are no stone quarries nor economic minerals. The only game seen were wild duck and geese.—*C. C. Fairchild, D.L.S., 1904.*

Township 44.—This township is reached by Iron creek trail from Wetaskiwin to Battle river as far as section 1, township 44, range 12, thence across Iron creek near the centre of township 44, range 11, to this township. The soil is generally good but very broken in places. The western portion is suitable for grain, but the southeast only for grazing. The west half of the township is generally open, while the east half has numerous bluffs of poplar. The timber is usually small, and will all be required for settlers. There are no good hay lands in the township. The water is fresh, but the quantity is limited, except in the broken part in the southeast. There are no streams or water powers. The climate is that of northern Alberta with no summer frosts observed. Wood sufficient for settlers is found in the township. There are no stone quarries nor minerals. Duck, chicken and one jumping deer were seen in the township.—*C. C. Fairchild, D.L.S., 1904.*

Township 53.—The surface of this township to the west of the Battleford trail, is undulating, and also sections 1 and 2, 11 and 12. The balance is rough and hilly. Bluffs of willow and poplar are scattered here and there, but they are only fit for fuel. There is no timber suitable for building houses or stables, but the settlers can get poplar for that purpose in townships 53 and 54, range 11, and in township 54, range 10. Vermilion river flows across the township, in a southeasterly direction first, and then nearly south. It is flooded every spring for four or five chains on both sides. This country can be reached from all directions by the Battleford trail, which runs nearly north and south through the centre of the township. The southern two-thirds of the township is a good second class soil well adapted for ranching and mixed farming. The northern third is more stony. The growth of grass is very rich all over the township. Good water is plentiful everywhere. There are no minerals, no stone quarries and no water powers. There is no fish and no game with the exception of prairie chicken and duck.—*A. Michaud, D.L.S., 1904.*

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Township 54.—This township is mostly rolling, except a few patches of land which are level. Sections 1, 25, 36, 35, 26, 18 and 19 are rough and hilly. The land is a good second class except to the northwest, where it is sandy. A lake, three miles long and a little over one-quarter of a mile wide, crosses sections 9, 10 and 11. At both ends of it, to the east and west, is a large swamp, which will be the best of hay land when drained. A creek flows out of this lake west, into Vermilion river. The land around the lake is the best in the township and is of easy access, by good trails on the north and on the south sides. The Battleford trail crosses sections 7, 8 and 5. I had to cut a trail through sections 17, 20 and 28. It is a good trail, and is the best way if not the only one to reach that part of townships 55, ranges 9 and 10, south of the River Saskatchewan. Vermilion river crosses section 6 with a rapid of about six feet of fall in a distance of seven chains, on the northwest quarter. The ranchers on Vermilion river above the rapid think of deepening the channel of the rapid to stop the flooding of their hay lands. That would also drain the big swamp in township 54, ranges 9 and 10. There is poplar and willow scrub everywhere; but on sections 15, 16, 17, 18, 19, 20 and 21, there was at the time of the survey some good spruce and tamarac; but a sawmill worked there all the winter of 1905, and I do not know what was left. There are no minerals nor stone quarries. Small game in the way of partridge, chicken and duck are found.—*A. Michaud, D.L.S., 1904.*

Township 55.—Saskatchewan river enters section 31, runs east, then south, then east again, leaving by sections 13 and 24. The river flows in a deep valley, which is entered by several deep ravines. The banks of the river on the north side and on the southeast are about two hundred and fifty feet or three hundred feet high; the southwest half is about one hundred and fifty feet or two hundred feet high; but the whole is a perfect chaos of deep and abrupt gullies. This township is almost useless for farming, except where the soil is not disturbed on sections 30, 19, 18, 7, 6, 8, 5, 9, 4, 10, 3, 11, 2, 12 and 1, where portions fairly undulating, with a clay loam soil is to be found. There is no water power and no stone quarries. Coal was found on section 32. Small game, such as partridge and duck, is plentiful. There are also a few bear and moose.—*A. Michaud, D.L.S., 1904.*

Township 56.—The surface of this township is undulating. That portion north of sections 7 and 8, west of section 16, and north of sections 16 and 15, and west of sections 23, 26 and 35, to the west and north limits of the township is good second class land, well adapted for mixed farming and ranching. The depth of the loam is from four inches to eighteen inches on a clay subsoil. The balance of this township is a poor third class, the soil being mostly everywhere sand and stones, without any loam, and is covered by poplars of a fair size, especially to the southeast. That portion is also covered by numerous muskegs and swamps. A large spruce and tamarac swamp covers all sections 4 and 9, the west of sections 3 and 10, and the north of section 8. There are no trees larger than eight inches in diameter. A good wagon trail crosses sections 30, 19, 20, 21, 22, 23 and 13, that trail branching off St. Paul road in township 56, range 11, reaches Saskatchewan river, in township 55, range 8. There is also another trail to St. Paul across sections 32, 33, 28, 27 and 22. There is a timber trail across sections 26 and 34. I opened one also across sections 22, 15, 10 and 3 to the south limit of this township, but it is very rough. Access to this township is easy from the east, west and north by the trails mentioned above, but it is almost impossible from the south. There is no water power, no minerals nor stone quarries. Small game like partridge and duck is plentiful. There is also a lot of wolves and muskrat. Two large lakes occupy sections 36 to the north and a good portion of sections 12 and 1 to the south.—*A. Michaud, D.L.S., 1904.*

Range 11.

Township 36.—There is a portion of the western part of the township that is rolling land, and the balance undulating, with clay loam soil and clay subsoil. It is gen-

erally first class although there are spots of second class land in places. There are several hay sloughs, and deep grassy sloughs to be found. Hay is plentiful both slough-hay and upland. The township as a whole is suitable for mixed farming. There is no timber except clumps of willow. I noticed no mineral of any kind. There are a few granite and sandstone boulders. Timber for fuel can be procured some twelve miles to the north. Large game is scarce but water fowl and prairie chicken are plentiful. There is a good road to this section of the country from the Calgary and Edmonton railway along the north side of Red Deer river, via Tail creek. I noticed a light frost on July 19, but no more until the middle of September.—*A. McFee, D.L.S., 1904.*

Township 37.—This is an undulating township, with a few level sections. Soil is sandy and clay loam, with very hard clay subsoil and ranks first and second class. Grassy sloughs, ponds, and small hay meadows dot the surface. There are occasional alkaline spots to be found, and a few ravines with water courses, having standing pools of water in them. The watershed is eastward. Hay is plentiful, red-top, slough, blue-joint and upland. There is no timber, only clumps of willow and small poplar, excepting a few poplar bluffs (up to six inches in diameter) on sections 19 and 20. I came across no minerals of any kind. There are a few hardhead boulders to be found in places. Timber for fuel can be procured from five to eight miles to the north. Large game is scarce, but water fowl and prairie chicken are plentiful. There is a good road into this section of the country from the Calgary and Edmonton railway along the north side of Red Deer river via Tail creek. I noticed a very light frost on July 19, but no more until September.—*A. McFee, D.L.S., 1904.*

Township 39.—This township, which is divided into two parts by Battle river, an almost impassable barrier at all times, is best reached from two points on the railway (Calgary & Edmonton line). That on the west and north side of this stream being best reached from Wetaskiwin, and that on the south and east from Lacombe, both good places to outfit at. A good trail, I am informed, exists all the way from Wetaskiwin to the northerly part of the next township to the west, from which there would be no difficulty in getting the rest of the way by keeping well up to the north boundary of that township. The trail from Lacombe by which the rest of the township may be best reached, I can speak of with certainty, having travelled over it myself. It is nowhere a good trail, but is passable, and as it gets more used will improve. Leaving Lacombe the trail, or road, leads due east at first, then a little southeast and so on keeping, generally, an easterly course, passing by way of Pleasant Valley and the village of Content at the mouth of Tail creek, and on through the Swiss settlement past McVittie's, on Beaverdam creek, and about twenty miles farther on, reaching Messrs. Nelson & Rich's place on Nelson creek in section 10 of this very township, the distance being about one hundred and ten miles by trail. The soil throughout is good, mostly clay loam, clay subsoil and is eminently suited for all ordinary crops, such as grain and roots, &c. With the exception of that lying in the valleys of Battle river and its tributaries, the surface is of a rolling or undulating character, and well drained, having a good many clumps of small poplar and willow brush scattered about, giving it a park-like appearance. About 3,500 acres of first-class farming land on the Wetaskiwin side, and about 10,500 acres on the Lacombe side of the river, comprises all of the workable land in the township, the rest being very much broken and cut up by the valleys (eroded) spoken of. There is no timber sufficient for lumbering purposes, but in many places along the river valley and ravines good building logs of poplar and balm of Gilead are to be had; a good deal, fitted for firewood and rails, is found all over the township. There are no large hay meadows in the township, but a good deal of upland hay can be cut almost anywhere, of excellent quality. Permanent surface water in ponds and marshes is fairly abundant and well distributed, and is about equally divided between good and bad. The water in the several streams found is very good, except that in Battle river, which though not bad flavoured, creates

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an undying thirst. As to water powers, Battle river itself can be dammed, but there are no falls or rapids of any consequence along it. By damming this stream between its banks a head of from ten to fifteen feet can be had in several places, and as the discharge is at low water about four hundred cubic feet per second, with perhaps ten times as much at high water, very nice power can thus be had. Also dams might be thrown across its valley or gorge and any desired head up to three hundred feet be had; a very considerable power could thus be created. There are also four other creeks in the township, all of which are found in deep ravines, which would permit of very high dams being thrown across them. In the case of creeks named, Corby, Nelson and Sidney, dams of great height (perhaps two hundred feet) could be got. This would impound an immense quantity of water, and, although the discharge of either of these is small, considerable power could be so got. There is a very fair supply of fuel in the way of poplar wood, found pretty well everywhere in the township, but more especially along the river valley. I did not see any places at which stone might be quarried, but I believe that good building stone (sandstone) exists along the valley of the river, and also on Nelson creek. I saw no other indications of minerals, other than some small pieces of lignite along the river, and along Nelson creek. I believe that a bed or beds of this substance exist in the township. Game is abundant, both large and small. Deer of a large kind are often seen, and their tracks are very numerous in places. The bush swarms with rabbits, and partridge and prairie chicken were plentiful and immense numbers of duck in every marsh or pond. Coyotes (prairie wolves) were numerous, and along the river some beaver were found. No indications of summer frosts were seen. The rainfall is apparently light. Two men, as partners, have fenced in with wire (a good fence) about 4,500 acres in the central part of the township as a cattle pasture, and at present have running on it about three hundred head of cattle of a very common kind. They have been in here some seven or eight years. I do not think their venture much of a success financially. They have enclosed the whole of sections 21 and 22 and parts of sections 14, 15, 16, 17, 23, 26, 27 and 28 and also a part of section 10, where their house is, and their stables and yards. The name of the concern is Nelson & Rich, Red Willow post office, Alberta.—*Fred W. Wilkins, D.T.S., 1904.*

Township 42.—The route used at present to reach this township leaves Wetaskiwin and passes through to Spring lake. From this place there is a trail leading into the township. The soil is a clay loam with a hard clay subsoil. All but the north row of sections may be cultivated, grain and hay may be grown. The surface is a rolling prairie, except the north row of sections, which is cut up by deep coulées and high hills. The soil is a hard clay with gravel in places. There are also numerous bluffs of poplar in these coulées. A shallow sheet of water, extends from the west boundary of section 18 to the centre of section 4. The outlet of this lake leaves the township in section 30. There is no timber suitable for building, but a limited quantity for fencing and considerable fuel, may be found in the north row of sections. The water supply is not permanent, except in the lakes. General climatic indications are good. No coal or lignite was observed; a limited quantity of wood will be found in the north row of sections. There are no water powers, stone quarries, or minerals of economic value. Wild fowl are abundant and a few deer were seen.—*S. B. Lucas, D.L.S., 1903.*

Township 43.—A good trail from Wetaskiwin to Battle river runs through this township. The soil is a good black loam suitable for grain growing. The surface is prairie, with some scattered clumps of scrub, particularly in the south, and some timber around the lakes. There is some good poplar and cottonwood on sections 3, 4 and 5 around the lakes, but all will be required for the settlers. Hay can be cut on the prairie in considerable quantities, but there are no hay meadows. The quality would be good. The water is fresh and a permanent supply can be obtained in the

sloughs and lakes. There are no streams nor water powers. The climate is good, no summer frosts being observed. Wood is the only fuel available in the township. There are no stone quarries, no coal or lignite veins and no minerals of economic value as far as I know. Duck and prairie chicken were the only game observed. This township has an excellent location on the proposed route of the Grand Trunk Pacific and is otherwise one of the best in the locality.—*C. C. Fairchild, D.L.S., 1904.*

Township 44.—This township may be reached by Iron creek trail from Wetaskiwin, which is generally in good condition. The soil is generally black loam and suitable for grain raising or ranching. The water is fresh, with a sufficient and permanent supply. Iron creek averages 30 feet wide, 3 feet deep with a 3-mile current. There is no danger of flooding. There is no hay, except highland, which may be cut in all parts of the township. A small water power might be developed with a dam, but I would not consider it practicable. The climate is good and no summer frosts were observed. Wood is the only fuel in the township and can be obtained north of Iron creek. There is some poplar reaching 10 inches in diameter on section 33 and considerable smaller timber north of Iron creek on the west half of the township, but it will all be required for the settlers. There are no stone quarries or minerals in the township. Duck and chicken were the only game seen.—*C. C. Fairchild, D.L.S., 1904.*

Township 55.—The land in this township is mostly rolling. A belt of thick poplar averaging four inches in diameter covers sections 6, 5, 8, 9, 16, 10, 15, 22 and 14; there is spruce on sections 13, 23 and 24. On these sections there is a chain of lakes, ponds, muskegs and swamps almost impossible to wade across even on foot in summer time. The part of this township, north of the muskegs to the west, is first-class land; to the east it is second-class. That portion to the south is third-class. There is a large hay meadow on sections 19 and 20. On the whole that portion to the north of the woods and muskeg is well adapted for mixed farming and ranching. The river Saskatchewan runs across sections 31, 32, 33, 34, 35 and 36; the banks on sections 33, 34, 35 and 36 are very steep; but access to the river is very easy on sections 31 and 32. I noticed traces of coal on sections 35. I was told that washing gold paid well a few years ago. I know nothing about the present. The current of the river is about six miles an hour. There is no water power and no stone quarries. Small game, in the way of chicken, partridge and duck is plentiful.—*A. Michaud, D.L.S., 1904.*

Township 56.—This township is conveniently situated for settlement, lying immediately south of Saddle lake and St. Paul reserve, with roads made, telegraph line and post offices. Saskatchewan river just south of it with many good landings, will afford easy means of freighting supplies from Edmonton. A large lake (Lake Santé) which runs in a southwest and northeast direction, occupies the centre; pike are plentiful in it and are easy to catch. The north and northwest portion of Lake Santé will range between first and second class. The south and southeast portion is not quite so good; but the whole can be settled on. As the soil is good, it would be suitable for grain growing, and I do not believe that there would be any early frosts. There is hay, and the grazing was first class all over the township. Good water can be got everywhere by digging to a small depth. The surface is undulating, except for sections 24 and 25 and the south of sections 1, 2, 3 and 4, which are rolling. To the south of Lake Santé is poplar suitable for building shacks and stables. On section 35 there is some spruce. There is firewood enough for the settlers for a few years. I noticed traces of coal on section 2, near Saskatchewan river. Small game in the way of chicken and duck is found here. There is no alkaline water or land. There are no water powers nor stone quarries. This township is of easy access from every side.—*A. Michaud, D.L.S., 1904.*

Township 57 (Secs. 1-6).—The six sections of this township which I surveyed are good second class land, well adapted for mixed farming and ranching. There is hay

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and good grass on each one, but more on section 5, where there is a large hay meadow. There is no timber suitable for building log houses or stables. A trail between Saddle lake and St. Paul de Metis crosses sections 5 and 2. Another very old trail crosses section 2 in a north and south direction. Small game in the way of chicken and duck is found here. There are no minerals, water powers nor stone quarries.—*A. Michaud D.L.S., 1904.*

Township 58.—The trail from Whitefish lake forks off to Saddle lake and St. Paul de Metis in this township. This is a good trail. The soil is black loam with clay subsoil and suitable for general farming. The surface is scrubby, with considerable poplar from two inches to ten inches in diameter. There is some hay land along the east side of the township. The water is fresh and in good supply. The streams are small and the land is not liable to be flooded. There are no water powers in the township. The climate is delightful and summer frosts are rare. There is enough wood for fuel. We saw no valuable minerals of any kind. Duck are plentiful and there are some moose and deer, fox and partridge.—*M. W. Hopkins, D.L.S., 1904.*

Township 59.—The trail from Whitefish lake that forks to Saddle lake and St. Paul de Metis passes across this township. This is a good road. The soil is a black loam with clay subsoil and is of number one quality, suitable for general farming. The surface is scrubby with clumps of poplar up to twelve inches in diameter. There are some good hay lands along the trail. The water is fresh and abundant. The streams are small. The land is not liable to be flooded. There are no water powers. The climate is delightful and summer frosts are rare. There is enough timber for fuel for the settlers. We saw no valuable minerals of any kind. As to game, there is abundance of duck. There are also moose and deer.—*M. W. Hopkins, D.L.S., 1904.*

Township 60.—The Saddle lake and Whitefish lake trail passes through this township from the south boundary to the west shore of Floatingstone lake, a good road. The soil is black loam with clay subsoil and is of number one quality and suitable for general farming. The southern and western part of the township is scrubby. The northeast part is heavily timbered with from two to ten inch poplar. On the islands of lower Mann lake there is some fine spruce, but scattered. There is some hay along the trail but in small quantity. The water is fresh and abundant. The streams are small. The land is not liable to be flooded. There are no water powers. The climate is delightful and summer frosts are rare. There is enough timber for fuel for the settlers. We saw no valuable minerals of any kind. Floatingstone lake is full of good whitefish and other kinds. Duck are plentiful. There are some moose, deer and fox.—*M. W. Hopkins, D.L.S., 1904.*

Range 12.

Township 5.—This township may be reached conveniently by wagon trail from Stirling, Alberta, which follows Etzikom coulée on the south side to range 15, where it crosses the coulée and extends along the north side of the coulée to this township. This trail is in good condition. The soil is a clay loam with a subsoil of clay, producing a good growth of grass, and is especially fit for growing roots and cereals. The surface is rolling prairie. The township is cut by Etzikom coulée running from west to east near the centre line of the township. The soil in the coulée and on its banks is principally clay and loose rock. There are signs of coal in this coulée, there being narrow flat veins cropping out on either side of the coulée. It is an inferior product near the surface, but increases in quality with the depth. The coal is soft and crumbles when exposed to the atmosphere. Etzikom coulée is about one-half mile wide and is over one hundred feet deep. It has water enough in it for watering stock. There are some small springs of saleratus water here. The coulée furnishes shelter for cattle, protecting them from the winds that prevail in this section. There is no

timber in this township. The grass is almost large enough for hay this dry season, so in wet seasons must produce an abundance of hay. The only water is in Etzikom coulée and there is not a continuous stream there. The surface is not liable to be flooded. There is no water power. The climate is mild and very dry. It is tempered by the Chinook winds. Summer frosts are seldom seen. The only fuel is coal, most of which is brought from Lethbridge, Alberta. There are no stone quarries and no minerals. We saw a few antelope in this township.—*R. J. Gordon, D.L.S., 1904.*

Township 6.—The best route for reaching this township is by trail from Stirling, Alberta, which runs parallel with Etzikom coulée, as far as township five, range 12; thence across the prairie to township six, range 12. The trail from Stirling is a good one. The soil is a clay loam with a clay subsoil. It produces good grass and is suitable for producing roots and cereals. The surface is rolling and undulating prairie. Chin coulée runs from west to east across the northerly part of this township. This coulée is from one-half mile to one mile wide and about two hundred feet deep. The soil in this coulée is clay saturated with saleratus and produces a few weeds and a little short grass. There are a few small saleratus springs in Chin coulee. There is no timber on the township. A prairie fire had burned all of the grass in this township a few weeks before we reached it, but judging this township by the one just south of it, I concluded that good grass is produced here, and that hay is plentiful in wet seasons. The only water on the township is furnished by two or three alkali springs in Chin coulée. The supply is not sufficient. There are no streams, lakes or ponds and the surface is not liable to be flooded. There are no water powers. The climate is mild and very dry. It is subject to sudden changes of temperature in winter, as the Chinook winds prevail here. They keep the snow melted sufficiently that cattle may graze the year round. Summer frosts are few in this locality. Coal may be obtained at Lethbridge, Alberta. There are no coal or lignite veins in the township. There are no stone quarries, no minerals were seen. We saw a few antelope on this township.—*R. J. Gordon, D.L.S., 1904.*

Townships 7 and 8 (east outlines).—These outlines run through an open, undulating prairie country. There is no timber and no water outside of the coulées. We were obliged to carry water for man and beast. The soil is a clay loam with a clay subsoil. There was no grass on or near these outlines, as a prairie fire had recently passed over this section of country. The indications were, however, that good prairie grasses grow here. In wet seasons good crops of cereals and roots may be produced; but it is an unsafe place for a farmer to locate on account of drought, to which the country is subject. Stock raising is carried on successfully as animals travel several miles to the coulées for water. There are no coal or lignite veins here and no minerals or stone quarries. The climate is mild and very dry. The Chinook winds temper the atmosphere and make it possible for animals to run at large the year round. Summer frosts are not common. The only game is antelope.—*R. J. Gordon, D.L.S., 1904.*

Township 36.—This is a high rolling township, with a number of grassy sloughs, gravelly ridges and alkaline spots on the flats. The soil is sandy and clay loam with hard clay and gravel subsoil, and is generally second class, although about one-third of the township is first class. There is a creek near the south boundary which runs eastward at high water, but at its normal condition has only standing pools of water. There is no timber, only clumps of willow and poplar in places. I discovered no minerals, or quarries, but a portion of the township is rather stony, both loose and sunken granite and sandstone boulders. Timber for fuel can be procured about ten miles to the north. Large game is scarce, but waterfowl and prairie chicken are plentiful. There is a good road from the Calgary and Edmonton railway via Tail creek to this part of the country. In very dry seasons I would judge there would be a scarcity of water, but as a whole the township is suitable for ranching and light farming. There is quite a quantity of slough and upland hay in all parts of the township.—*A. McFee, D.L.S., 1904.*

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Township 37.—This township is high, dry and undulating, with a few grassy sloughs, and some ravines with water courses, running eastward in high water but dry in the summer. There is one of these ravines with a number of tributaries which runs across the township from west to east, about two miles south of its north boundary. The soil is sandy and clay loam, with hard clay subsoil; mostly second class. The soil is gravelly on top of the ridges. There is some alkaline spots in the low places. There is a small lake of fresh water on sections 14 and 15. There is no timber only scattered clumps of willow and small poplar. I noticed no minerals. There are a few scattered sandstone and granite boulders. Timber for fuel can be procured about five or six miles to the north. Large game is scarce, but water fowl and prairie chicken are plentiful. There is a good road to this part of the country, from the Calgary and Edmonton railway along the north side of Red Deer river via Tail creek. There is abundance of upland hay, but no large meadows. In very dry seasons surface water would be scarce. I consider the township as a whole suitable for ranching or mixed farming. I noticed a very light frost on July 19, but did not see any more until September.—*A. McFee, D.L.S., 1904.*

Township 39.—This township is divided into two main parts by Battle river, which are practically inaccessible one from the other. This stream crosses this township from section 30 to section 1, cutting it into southwest (one-third) and northeast (two-thirds) parts. That belonging to the northeast part will be best reached from Wetaskiwin on the Calgary and Edmonton line, from which place, I am told, a good trail exists right into the township. The southwest part is best reached from Lacombe, from which point (also on Calgary and Edmonton railway line) a passable trail leads due east practically, by way of the valley of Content and on through the Swiss settlement and on until McVittie's place (section 2, township 38, range 14) on Beaverdam creek is reached. From this point, according as it is desired to reach the easterly or westerly part of the township a different way must be taken, the distance not being great, and easily made in one day with heavy loads. The soil (clay loam on clay subsoil mostly) with little exception, is excellent throughout the whole of the township, and in every way suited for agriculture. As to the surface of the land, that that is not cut up and washed out in the almost numberless gullies, ravines, gorges, &c., which exist almost all over the township, is of a rolling character, in admirable shape for farming. Battle river flows along in a gorge or valley from about two hundred and fifty to three hundred and fifty feet below the general level of the country, and Beaverdam creek is in much the same environment. Corby creek also runs in a large deep ravine. About one-half of the township is fairly accessible for farming purposes, the other half is best suited for a range for stock, the grass being good as a rule, and water plentiful. There is in this township a considerable quantity of very fine and valuable timber. Along Beaverdam creek, in sections 3, 4 and 5 are groves of some of the finest spruce I ever saw, many trees measuring thirty inches or more on the stumps and tall in proportion. Because of the inaccessible nature of the valley or gorge of this stream, I could not make, without spending a good deal of time, anything like a close estimate of the quantity, but there is at least 1,500,000 feet, board measure, of this beautiful spruce, besides a very considerable quantity of very fine white poplar and balm of Gilead, of good sound quality large and long. The spruce is of a kind that I am not acquainted with, is very white, and from the way it chops, will work almost as well and easily as white pine. There is not much valuable timber along Battle river, but in the very deep coulées and ravines which run into its valley in the eastern part of the township and those running into and forming Corby creek, some very fine poplar, balm of Gilead and white birch timber grows—any amount in fact for building logs for the whole settlement of the townships. The quality of the timber of the white birch is excellent, being almost as strong as rock elm, making splendid axe-helves and whiffle-trees. In sections 20, 29, 30, 31 and 32 is a consider-

able quantity of very level land of a swampy character. A great deal of fine low-land hay grows here, probably one thousand tons could be got in this tract in a favourable season. The quality is excellent. A good deal of upland hay can be cut almost anywhere in the township; and in the bottoms of the long coulées running into Corby creek in the east, large quantities of a coarse marsh hay can be obtained. The water found in the township is generally of a saline or alkaline character and mostly bad. That found in Corby creek and in the Beaverdam, is good, and in the many coulées some springs of good water are found. Battle river furnishes poor water, owing, I believe, to the many saline springs found along its valley. I should be inclined to think that borings made here would show beds of salt to exist in this locality. There are no falls or rapids of any consequence on any of the streams found in the township, and therefore no easily developed powers could be had from water. I saw several places along Battle river and along Beaverdam creek that could be dammed fairly easily so as to give a head of from ten to twelve feet perhaps, but this would not give a large power in either case. The flow of the Battle is at low stage about four hundred cubic feet per second, and about ten times this in very high stages. In Beaverdam creek the flow is perhaps one-tenth of this, and in Corby creek one-twentieth would be about its discharge. Dams of great height could, however, be erected across the valleys of these streams, and considerable power obtained thereby, but this would be costly work, except perhaps in the case of the Beaverdam, which flowing as it does in a deep narrow gorge cut through sandstone rock, could be dammed at a reasonable cost. A head of almost two hundred feet could by this be had on any of the above streams. Wood is the only available fuel, procured mostly along the valleys of the river and creeks, and ravines leading thereto. A few scattered clumps of small poplar are found over the level part of the township, but the supply from this source is small. A large supply is procurable in the valleys spoken of. Along Beaverdam creek in sections 3, 4 and 5 are places at which I would judge quarries of sandstone (buff coloured rock) could be opened up, the stripping light and the quality, I believe, good. Also I noticed sandstone rock of the same colour in sections 19 and 30 along Battle river valley. I noticed some brown shales in the valley of Beaverdam creek on section 5, and I also saw pieces of float coal or lignite along Battle river. It is probable that beds of lignite exist in this locality. Of other useful minerals, except as before noticed about salt, I did not see any indications. No large game was seen, but rabbits exist in immense numbers in the bush along the river banks, and in the ponds and marshes are great numbers of duck. Prairie chicken and partridge were fairly abundant also. Of fur-bearing animals, coyotes were numerous, and muskrat countless in the streams and marshes. A man named Corby (not at home when I was in the township) has about eight thousand acres of the easterly part fenced in as a horse pasture and about two hundred head of horses running therein. I saw no signs of summer frosts. The rainfall is evidently light, as cacti were seen in the river valley.—*Fred W. Wilkins, D.T.S., 1904.*

Township 42.—This township will be most easily reached from Wetaskiwin, via Heatherbrae, and Spring lake, thence to the ranch of Messrs. Duggan & Co., thence across country into the township. The soil is a sandy loam in the two north rows of sections, and a heavy clay loam in the rest of the township; the subsoil is clay. Grain and roots will grow well in the north part of the township, and grain in the south part, but the central part of the township contains a good deal of low land that will require draining in wet seasons. The surface of the township is rolling prairie, high in the north and south, but low in the central part. A creek of from four to six feet in width crosses the centre of the township, coming from the west. A few bluffs of small poplar are met with in the north part of the township. The rest of the township is dotted with sloughs having a fringe of willows about them. There is no timber fit for building or fencing in the township. The growth of hay is luxuriant on the high land.

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The water supply is not permanent. General climatic indications are good. There are no water powers, no coal or lignite, no stone quarries, and no minerals of economic value were seen. There is little or no wood to be had. Wild fowl are abundant.—*S. B. Lucas, D.L.S., 1903.*

Township 43.—The route used at the present time to this township, is from Wetaskiwin, going east and southeast to the head of Iron creek thence across country into the township. From Wetaskiwin to Iron creek a fairly good trail exists. The soil in this township is a sandy loam in the north half and a clay loam in the south half, and is suitable for the growth of grain and roots. The surface of the township is a rolling prairie. The sloughs are not numerous, but there are a greater number of poplar and willow bluffs than in the adjoining townships. There is no timber for building purposes, but there is considerable fencing timber, and fuel, in the bluffs. The upland grass is rank and will yield great quantities of hay of good quality. The supply of water is not permanent. There are no water powers. The general indications of the climate are good; light summer frosts were observed. No coal or lignite was observed, but the numerous bluffs of poplar and willow will supply fuel for some time. There are no stone quarries. Wild fowl were seen in abundance. No minerals were observed.—*S. B. Lucas, D.L.S., 1905.*

Township 44.—Iron creek trail from Wetaskiwin to Battle river passes through this township. It is in good condition. The soil on the north side of Iron creek is black loam, suitable for grain growing. On the south side of the creek the west part is low, suitable for hay and pasture, while the east part is suitable for grain. The surface is prairie with small patches of four-inch poplar and scrub north of Iron creek, but very little south of the creek. No timber suitable for building was seen. The southwest part of the township has about one thousand acres of good hay lands, the grass being the ordinary marsh grass. Iron creek runs through the township and the lakes shown are generally of good water. Iron creek was about two chains wide and six feet deep, with slow current, at the time of survey, and the banks marshy. These marshes are liable to flood in high water. No water power can be developed either with or without dams. The climate is that of the Edmonton district. No summer frosts were observed. Wood and lignite can be obtained to the north and northwest of the township. There are no stone quarries nor minerals in the township. Geese, duck, and chicken were the only game seen.—*C. C. Fairchild, D.L.S., 1904.*

Township 56.—From Saddle Lake agency a good trail crosses the township from section 34 to section 3. A spruce swamp of about twenty chains in width follows on a terrace on each side of the Saskatchewan. On the west side of the river the soil is light and sandy and rather poor for agricultural purposes, but on the east side of the river the soil is a rich black loam over a clay subsoil and is suitable for wheat raising and other kinds of farming. The west side of the river is thickly wooded with poplar and cottonwood and some spruce, except on sections 5 and 6, where it is more of a scrubby nature, and is broken by hills of about one hundred and fifty feet high. On the east side the country is open, rolling prairie with bluffs of young poplar and willows, except for the belt of spruce along the river. In the valley of the river there are patches of spruce from six to twelve inches in diameter, but the spruce of commercial value seems to have been cut several years ago. There are no hay meadows of any size in the township. The water is fresh and is found in the Saskatchewan, which flows through sections 33, 28, 29, 20, 17, 8, 5 and 4, also in a permanent lake in sections 13 and 14. The land is not liable to be flooded. There is no waterfall or any available water power. The climate is good, and there are no indications of summer frosts. Wood for fuel can be obtained in the hills adjoining the river. No coal has been discovered in the township. There are no stone quarries. No minerals of any value have been discovered in the township. Duck and chicken are the only game to be found.—*J. L. Côté, D.L.S., 1904.*

Range 13.

Township 4.—The best route for reaching this township is by wagon trail along the south side of Etzikom coulée from Stirling to the township considered. The road is a good one. The soil is a clay loam with a subsoil of clay. It produces good grass and is suitable for the growing of roots and cereals. The surface is rolling prairie. There is no timber. On account of drought the grass is too short for hay making. There is no water on this township, neither stream, lake, pond or slough and the surface is not liable to be flooded. There is no water power. The climate is mild, being tempered by the Chinook winds. The days are hot and the nights cool, in summer. There is enough rain and snow to produce good grass for grazing purposes. Cattle run at large the year round as the snow does not fall deep enough to cover the feed. Summer frosts are unusual. There is plenty of coal at Lethbridge and some in Etzikom coulée nearby. There are no coal or lignite veins in the township, no stone quarries and no minerals. Antelope is the only game.—*R. J. Gordon, D.L.S., 1904.*

Township 5.—There is a good trail from Stirling, Alberta, which follows the south side of Etzikom coulée to this township. The soil here is a clay loam with a clay subsoil. It produces good grass and is suitable for growing roots and cereals. Part of this township is too rolling for farming, but it is good for grazing purposes. The surface is open prairie with no timber of any kind. Etzikom coulée cuts through the south end of the township from west to east and forms the basin of Crow Indian lake. The only hay is obtained from the prairie grasses which, on account of drought are too short for hay making this season. Crow Indian lake is a permanent body of fresh water on the shores of which good wells may be dug. Several thousand animals drink at this lake daily. There are no streams except in flood time when water runs in Etzikom coulée. The surface is not liable to be flooded. There are no water powers. The climate is mild and very dry. Drought sometimes visits this section destroying crops to a considerable extent. The Chinook winds temper the climate, melt the snow and make it possible for cattle to graze the year round. There is a vein of coal in sections 11 and 12 in Etzikom coulée. It is a flat vein about two feet thick and fifteen feet below the surface, where the pit is shown in notes. The quality of this coal is inferior, being very soft, and it crumbles when exposed to the atmosphere. Most of the fuel is obtained at Lethbridge, Alberta, where coal mines are operated. There are no stone quarries, and no minerals were seen. Duck and geese are plentiful on Crow Indian lake. There are a few antelope in this township.—*R. J. Gordon, D.L.S., 1904.*

Township 36.—The land is undulating and rolling prairie, with a number of ponds and grassy sloughs, some of them fringed with willow. The soil is black and clay loam, with hard clay subsoil; classes 1 and 2. There are three small fresh water lakes in the township; one in section 31, with banks only from two to three feet high, surrounded by a fine meadow of blue-joint hay; the other two lie in sections 8 and 9, and 4 and 5; the banks of both are low. I found no minerals or quarries. Sandstone and granite boulders are scattered more or less all over the township. They are very thick in sections 7, 8, 10, 11, 14 and 15. There is no timber, only a few scattered clumps of willow. I consider this township very good for mixed farming and stock raising, as there is an abundance of slough grass, blue joint and upland hay. There is both wood and coal about ten miles to the north. Large game is scarce, but waterfowl and prairie chicken are plentiful. There is a good road from the Calgary and Edmonton railway along the north side of Red Deer river via Tail creek to this part of the country. I noticed a very light frost on July 19 this season; which was the only frost noticed until September.—*A. McFee, D.L.S., 1904.*

Township 43.—The route used at present to reach this township is from Wetaskiwin going east and southeast to the head of Iron creek, thence across country into

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the township. The road from Wetaskiwin to Iron creek is good. The soil is a clay loam from six to twelve inches deep, with a subsoil of clay, and is well adapted for the growth of grain and roots. The surface of the township is a rolling prairie, having numerous sloughs and small bluffs of willow and small poplar scattered over it. There is no timber suitable for building purposes and very little fit for fencing. Poplar and willow will supply fuel for a number of years. Hay may be had in abundance in wet years on the uplands and in dry seasons the sloughs will yield considerable. The water supply will be good in wet years only. General climate indications are favourable; light summer frosts were observed. No water powers, stone quarries, coal or lignite, or minerals of economic value were observed. Deer are scarce, wild fowl are abundant. The township is well adapted for grazing or grain growing.—*S. B. Lucas, D.L.S., 1903.*

Township 44.—This township lies on Iron Creek trail, from Wetaskiwin to Battle river. The trail is in good condition. The west part and south third of the township is of good deep clay loam generally, while the east central part is generally stony and marshy, with the extreme east light and somewhat stony. The west half and south third is suitable for grain raising, while the balance is suitable for stock raising. The surface is prairie, with a few bunches of scrub in the west part. There is no timber. Hay can be cut on the west part of the township and in many of the sloughs in the east part. It is of good quality and in considerable quantities. The water is generally fresh, but some of the sloughs are quite alkaline. There is always more or less water in the small streams, and Iron creek at its lowest is 12 to 15 feet wide, 1 foot deep and flows with a strong current. It sometimes overflows its banks, but only where the country is wet and unfit for cultivation. The creek is not suitable for water power. The climate is that of the Edmonton district and not much liable to summer frosts. Wood and coal (lignite) are the available fuels, and either must be obtained without the township. Wood is found both north, west and south, and coal up the creek a few miles. There are no stone quarries or minerals in the township. Water fowl and prairie chicken were the only kinds of game observed.—*C. C. Fairchild, D.L.S., 1904.*

Township 56.—The route for reaching the township is as follows: Starting from Paradis crossing, which is on the main trail from Edmonton to Saddle lake, and in section 1, township 57, range 14, a fairly good trail runs in a southeasterly direction to section 30 of township 56, range 13, and thence in a southerly direction to section 7, from section 7 the trail runs in a southeasterly direction; this trail has been built by the Russian settlers for their own convenience. The soil is generally of a sandy and stony nature over a sandy subsoil; the tier of sections adjoining the west and south boundaries of the township is suitable for mixed farming; the rest of the township is badly broken by lakes, swamps and hills covered with a thick growth of poplar, cottonwood and willow and only patches here and there are suitable for agricultural purposes. The surface is generally of a rolling or hilly nature. The sections adjoining the west and south boundaries of the township are covered with heavy willow scrub and young poplar, with occasional patches of open prairie, whilst the remaining sections are covered with thick poplar, cottonwood and willow woods, with some spruce around the lakes. No timber of any commercial value was seen. There is no hay meadow of any extent. The water is fresh and is found in three permanent lakes, besides numerous ponds and marshes. Sandy lake covers most of sections 21 and 28 and part of section 27, and its outlet, which follows the east boundary of section 32, is six feet wide and eighteen inches deep, with a current of four miles an hour. A second lake is situated in sections 12, 13 and 14, and a third in sections 3 and 10. The land is not likely to be flooded. There is no waterfall nor any available water power. The climate is good and there are no indications of summer frosts; the grain of the squatters had a good appearance. Wood for fuel can be obtained on every section, but no coal or lignite veins have been discovered. There are no stone quarries. No minerals of any

value have been discovered. The following game is to be found: chicken and duck and some deer and bear.—*J. L. Côte D.L.S., 1904.*

Township 57.—There is a wagon road and telegraph line from Victoria to Saddle lake, which enters this township on the north boundary of section 31, to which point it is about twenty-six miles from Victoria, or one hundred and one from Edmonton. In view of the fact that this road is the only means of communication with the centres of distribution for a large district, it is not in anything like a satisfactory condition, it being apparently no one's business to see that it is kept in repairs; for instance, a small forty-foot span bridge across Whitemud river, which was washed out by the spring freshet on April 14 of this year, was not replaced by the 30th day of May, and for all I know to the contrary, may not be replaced yet. On the south side of the river there is a wagon trail between the current ferry, operated by the government, at the northeast corner of section 10, and Andrews; this is nothing more than a cart trail swamped through the bush. Saskatchewan river itself affords the best means of reaching this township or of bringing supplies to it, from Edmonton or Fort Saskatchewan, the river being navigable for the entire distance for light draft scows or boats. The soil consists of a varying thickness of black loam overlying a clay subsoil, for the most part, although it is sandy in places. The surface of that part of the township to the north of Saskatchewan river is steeply rolling, and the greater part of it is covered with bush although there are some fairly open tracts of land scattered all through it; owing to the irregularity of the surface, this land is more fit for grazing than for mixed farming. The surface of that part of the township to the south of the river consists of a high rolling plateau, almost entirely covered with thick poplar woods. There is some fair sized spruce timber along the left bank of Saskatchewan river in sections 7 and 18, although the best of it was taken out last winter by a party of hand loggers, while sections 30 and 31 contain about 450 acres of jackpine, which, however, is too irregular in its growth to be good for sawmill purposes. The rest of the township is all more or less covered with poplar, suitable to the needs of settlers, for building houses and fences. There are no hay meadows in this township, but, wherever the surface is open, or partly open, there is a good growth of hay. There is excellent feed for loose stock all over that part of the township to the north of the river. Saskatchewan river, which flows through this township, has an average width of 800 feet, and, at ordinary stages of the water, an average depth of three and one-half feet and current of three miles per hour; the channel is clear and unobstructed, but Crooked rapids, which are situated opposite traverse station No. 11 on the left bank of the river, in section 7, must make navigation difficult at low stages of the water. The rapids are caused by a lot of big boulders in the channel at that point, with probably, a high reef of bed rock at its upstream end. There are no permanent creeks of any size in this township, but it is abundantly watered by lakes and sloughs. All the water in this township seems to be fresh, and there is no liability to flood. There are no available facilities for the generation of water power in this township. This part of the country is, at the present time, liable to summer frosts, but it seems certain that, as the land is cleared, drained and ploughed, this liability will steadily decrease, until, in a few years time, it will have ceased to exist altogether. I know of no coal in this township, but there is abundance of wood fuel available for many years to come. I know of no stone fit for quarrying in this township. I know of no minerals in this township. Owing to the proximity of Saddle Lake Indian reserve, there is very little game of any kind to be found in this township.—*R. W. Cautley, D.L.S., 1904.*

Township 58.—There is a wagon road and telegraph line from Edmonton to Saddle lake, which passes through the southwest corner of section 6, in this township. It is about 100 miles from Edmonton to the west boundary of said section. This road is in fairly good condition from Edmonton to Wostock, a distance of 51 miles, but so bad as to be almost impassable with a loaded wagon, in many places from Wostock

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to Pakan, a distance of 24 miles, then fairly good from Pakan for about 20 miles towards Saddle lake, and very bad again for the remaining 5 miles. The soil consists of a varying thickness of black loam on clay and sometimes gravel subsoil, while the surface is gently rolling, except in the southeasterly corner of the township, where it is a good deal broken up into low, but steep hills and wet marshy valleys. The westerly 4 tiers of sections are, for the most part, densely covered with poplar, willow and scrub, while the two easterly tiers of sections are much more open. Sections 36 and 35 comprise the best looking land I have seen in the whole season's work, gently undulating prairie, alternating with clumps of poplar and willow bush, and sloping easily towards Stony creek. There is a good deal of fair-sized poplar in the 4 westerly tiers of sections, but not much spruce and jackpine; the poplar is suitable for building houses, stables and fences. Good hay grows on the open hillsides in 2 easterly tiers of sections, and there are numerous hay sloughs all over the township, which yield very coarse grass at the present time, but which, in most cases, could be improved into first-class hay lands by a little draining. Stony creek passes the northeasterly corner of this township, flowing through a very pretty lake in section 25; it has an average width of 40 feet, depth of 3 feet and current of 2 miles an hour. There are several lakes, besides numerous sloughs, marshes and ponds scattered over this township, all of which contain fresh water. Before finishing my survey, all the lakes, hay sloughs, marshes, &c., were 2 or 3 feet deeper than I should have believed possible, but this spring flood does not affect much surface, although it has the effect of giving depressions which would be dry in a dry season all the appearance of small lakes. There are no falls or rapids available for the generation of power in this township. This section of the country is, at the present time, liable to summer frosts, but there seems to be no doubt that, as the surface is cleared, drained and ploughed, this liability will steadily decrease, until it finally ceases to exist altogether. I know of no coal in this township. There is any amount of wood fuel available for many years to come. I know of no stone or minerals in this township. Several tracks of moose, bear and deer were seen in the township. There are numbers of waterfowl in all the lakes, and grouse in the woods. Jackfish of a considerable size were seen in the lake on section 25 and smaller ones in the lake on section 28. There were not, at the time of the survey, any settlers in this township, but, before I left several Russian land seekers were seen.—*R. W. Cautley, D.L.S., 1904.*

Range 14.

Township 3.—The best route for reaching this township is by the wagon trail, which follows the south side of Etzikom coulée as far as township 5, range 15, thence southeasterly across the prairie to the township under consideration. The soil is a light clay loam with a subsoil of clay, producing a good growth of prairie grasses, and is well suited to the production of roots and cereals. The surface is open prairie, has no timber of any kind, and on account of the drought this season, the grass is too short for hay making; but in wet seasons hay may be cut from any part of the township. Bunch grass is the quality that makes hay here. There is no water on this township, neither spring, stream, lake pond or slough of any kind. The surface is not liable to be flooded. The Alberta Railway and Irrigation Company has made surveys in this township for the purpose of constructing canals, and in a short time water in abundance will be available. There is no water power whatever. The climate is mild and very dry. The temperature changes very quickly. The Chinook winds keep the snow from lying deep, and consequently the summers are long and the winters short. Summer frosts are very rare in this locality. Coal is the only fuel at hand. There is abundance at Lethbridge, Alberta. There are no coal or lignite veins in the township. There are no stone quarries and no minerals. Antelope are to be found in a limited number.—*R. J. Gordon, D.L.S., 1904.*

Township 4.—There is a good wagon trail on the south side of Etzikom coulée from Stirling to township 4, range 14, west of the fourth meridian. The soil is clay loam, with a subsoil of clay, producing a good growth of grass and is well adapted to the raising of roots and cereals. The surface is rolling prairie, having no timber of any kind. Because there is no water of any kind, there is no hay produced; but the Alberta Railway and Irrigation Company have made surveys in this township for the purpose of building canals and it is only a matter of time till there will be water and hay in abundance. There is no water power, as there is not a drop of water on the township. The surface is not liable to be flooded. The climate is mild and very dry. Chinook winds keep the snow away; cattle graze the year round. There are no summer frosts. There is plenty of coal at Lethbridge. There are no coal or lignite veins in the township, no stone quarries and no minerals. A few antelope are the only game.—*R. J. Gordon, D.L.S., 1904.*

Township 36.—The land is mostly undulating prairie, with some ponds and grassy sloughs, with occasional alkaline spots. The soil is nearly all first class; clay loam and hard clay subsoil. The eastern arm of Sullivan lake covers the central portion of the south half of the township with bad clay-coloured, muddy, alkaline water. There is a fresh water lake lying in sections 32, 33, 28 and 29, with low banks on its west side, and from ten to twelve feet high on its east side, and a creek flowing out of its southeast corner into Sullivan lake and there is another small fresh water lake lying in sections 11 and 14. This township is suitable in every way for mixed farming. There is plenty of hay both slough grass and blue point. Outside of a few bluffs of small poplar in the southwest corner of the township there is no timber, only scattered clumps of willow. I found no minerals or stone. There is timber suitable for fencing or fuel, and coal is found about eight miles to the north and another coal seam in township 37, range 15, on the north arm of Sullivan lake. There is a good trail from the Calgary and Edmonton railway that runs along the north side of Red Reer river, via Tail creek to this section of the country. Large game is scarce, but there is plenty of waterfowl and prairie chicken. The first frost that I noticed this season was on July 19, which was very light.—*A. McFee, D.L.S., 1904.*

Township 43.—The route used at present to reach this township is from Wetaskiwin. The estimated distance is eighty miles, over a fairly good road, which is being improved yearly. The soil is a clay loam of from six to twelve inches, with a subsoil of clay, suitable for growing grain and roots. The surface is rolling prairie thickly dotted with small sloughs, nearly all surrounded by a thick growth of small willow and poplar. There is no wood suitable for building timber, and not much for fencing. Hay may be cut in nearly all the sloughs in dry seasons, and in wet years considerable may be cut on the uplands of better quality. The water in these sloughs is good, but will only be available in wet seasons. A running stream of good water crosses the township near the centre, from west to east. This stream is from ten to twenty feet wide, and from one to four feet deep; the current is sluggish and does not overflow. There are no water powers. Summer frosts were observed, but they were light. Wild fruits were plentiful. Fuel is scarce, only small poplar and willow. No indications of coal or lignite or mineral of any kind were seen, and no stone quarries. All kinds of wild fowl are abundant.—*S. B. Lucas, D.L.S., 1903.*

Township 44.—This township lies on the trail from Wetaskiwin to Battle river called Iron creek trail. The soil is a deep, rich black loam suitable for grain raising. The surface is prairie, with small bluffs of poplar averaging four inches in diameter and with numerous small willow sloughs. Probably ninety per cent of the surface is prairie. Hay can be cut on almost any part of the open prairie of good quality and quantity. The water is fresh, but the supply of surface water is liable to run short in a dry season. The small streams shown have water in places all the year around, but do not run, and at no time are they liable to flood the land. There are no water

powers. The climate is that of the Edmonton district with very few summer frosts, if any. Wood is the fuel obtainable in the township, but lignite coal is procured along Iron creek to the north of the township, but there are no indications of any coal in the township. There is no stone in the township. There are no minerals in the township. The only game seen in the township were duck and geese, with an occasional prairie chicken. This township is one of the best I have seen in the district east of Wetaskiwin.—*C. C. Fairchild, D.L.S., 1904.*

Township 58.—*R. W. Cautley, D.L.S.*

No report received for this township.

Township 59.—The trail from Victoria to Lac LaBiche enters this township on section 6 and leaves it on section 24, and is in a fair condition. The soil is generally of a sandy stony clay, though in some places sand prevails, and the whole township is covered with two or three inches of black loam; it may be rated as second class and is suitable for mixed farming. The southern and eastern portions are generally rolling, while the northwest portion is undulating. It is all covered with poplar of from two to eight inches in diameter, with willows and a few bluffs of jackpine. Stony creek is about twenty links wide and one foot deep, the current is about two miles per hour. This creek enters the township on section 34 to leave it on section 13, where it forms into muskegs. There are permanent lakes on sections 1, 2 and 8 with fresh water. No summer frost was observed. There is no lignite and no stone quarries. Two iron claims are surveyed on section 6. No game was seen.—*J. L. Côté, D.L.S., 1904.*

Township 60.—The nearest trail to this township is the Victoria to Lac LaBiche trail, which runs from section 6 to section 24, in township 59, range 14, and approaches to within two and one-half miles of the southeast corner of the township. There are no trails running through the township and I had to cut wagon trails to move from one camp to another. A large area of this township is covered with spruce and tamarac swamps and muskegs and Stony creek is entirely lost in them. Fair land is found on sections 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 and 24, although it is stony and would not be very suitable for agricultural purposes unless the swamps and muskegs were drained by deepening the channel of Stony creek. The township is covered with scrubby spruce and tamarac, except on the above mentioned sections, where there is poplar and cottonwood averaging from three to eight inches in diameter. There is no hay. The water is fresh and is to be found in all the swamps and muskegs and also in three permanent lakes in sections 8, 10 and 11. There is no water power. The climate is good, but probably liable to summer frosts owing to the presence of so much muskeg. Wood for fuel can be procured on every section. There have been no coal veins discovered in the township. There are no stone quarries. No minerals of value have been discovered in the township. The game consists of some deer and moose.—*J. L. Côté, D.L.S., 1904.*

Range 15.

Township 3.—The best route for reaching this township is along the Alberta Railway and Coal Company's railway as far as Brunton station, thence easterly across the prairie to the township. The road is not a good one. The soil is a light clay loam with a subsoil of clay. It produces a good growth of grass and is well suited to the production of roots and cereals. The surface is rolling prairie. Verdigris coulée extends from northwest to southeast through the township. The soil in this coulée is clay and gumbo upon which weeds and a little grass grow. This coulée is one-half mile wide and has many branch coulées which make the surface near the coulée too rough for anything but grazing purposes. There is no timber in this township. There was no hay produced on account of the drought prevailing in this sec-

tion of the country. The only water in this township is Verdigris lake, which is alkaline. There are no streams, ponds or sloughs. The surface is not liable to be flooded. There is no water power. The climate is mild and very dry, with hot days and cool nights in summer. Summer frosts are very rare in this locality. There is an abundance of coal at Lethbridge, about fifty miles distant. No coal or lignite veins have been discovered. There are no stone quarries, but there is a little inferior sandstone along the outlines of Verdigris coulée. There are no minerals. There are some antelope here. The Alberta Railway and Irrigation Company (a corporation including the Alberta Railway and Coal Company, the St. Mary's River Railway Company and the Canadian Northwest Irrigation Company) is making surveys in this township for the purpose of constructing canals.—*R. J. Gordon, D.L.S., 1904.*

Township 4.—There is no wagon trail leading to this township, but there is one running from Brunton station on the Alberta Railway and Coal Company railway to Steed's ranch in township 5, range 15. This trail passes near the north boundary of this township, and is probably the best route to follow to this vicinity. The soil is clay loam with a clay subsoil. It is suitable for producing cereals and roots, and produces good grass. The surface is rolling prairie with no brush or timber of any kind. There is no hay except in wet seasons when prairie grasses are fit for making hay. There is one slough of good water in the southwest part of the township. This is the only water in the township. There is no water power. The climate is mild, being tempered by the Chinook winds. The rain fall is light and drought sometimes destroys crops. Summer frosts are not frequent, the snow fall is light, allowing cattle to graze the year round. There is an abundance of coal at Lethbridge on Belly river. There are no coal or lignite veins in the township and no minerals. The only game is antelope in a limited number. The Alberta Railway and Irrigation Company have made surveys here for the purpose of building canals and doubtless this section of country which is now unsettled will be converted into a wealthy farming district.—*R. J. Gordon, D.L.S., 1904.*

(Part) Township 36.—The surface is principally undulating prairie with deep ravines (or dry water courses) heading eastward towards Sullivan lake. There is a flat, from forty to sixty chains in width, lying along the west side of the lake in this township. It is considerably cut up with dry water courses, but the soil is fairly good. Along the ridge (west of this flat) there appears to have been a large quantity of coal burnt at some period, as the surface is of burnt clay, piled up in all shapes from thirty to eighty feet high. The soil is mostly clay loam, with very hard clay subsoil and is suitable for mixed farming or ranching. There is no timber worth mentioning, only some willow and young poplar along the ravines. The most readily available fuel is poplar timber, eight to ten miles to the northwest. I noticed some outcroppings of coal on the northeast quarter of section 19, but I believe coal could be found all along the ridge described above. There is a creek of fresh water running through the southwest corner of the township which apparently goes dry in dry seasons, with the exception of the deep holes along it. There is fresh spring water oozing out of the banks of these ravines, but the water in Sullivan lake is no good. It is just like Gough lake, clay coloured and alkaline. There is plenty of good upland hay, but there are not as many hay sloughs in this part as there are in the vicinity of Gough lake. The east boundary of section 7 runs through a good sized slough, which lies in the southeast quarter of 7 and the southwest quarter of 8, and another large one on the southwest quarter of section 6. There is no water power, or stone quarries, or anything of marketable value, except the above described outcropping of coal. The climate is similar to any other section of Alberta. The first frost was in September. Large game is scarce, some coyotes and porcupine, but any amount of geese, duck, prairie chicken, snipe, plover and some swans. This township (or Sullivan lake) can be reached by a fair road from Blackfalds station, on the Calgary and Edmonton railway. This

trail runs east on the north side of Red Deer river and crosses Tail creek near its confluence with that river, from there bearing a little south of east to the north arm of Sullivan lake.—*A. McFee, D.L.S., 1904.*

(Part) Township 36.—On July 4, 1904. I commenced the survey of this portion of the township by continuing (from last season's survey) the second and third meridian from the west, northward across Sullivan lake, completing the balance of the township in accordance with the instructions in the Manual of Surveys. The east shore of (this arm of) the lake is rather crooked and runs across the township in a northeasterly direction, from the southeast quarter of section 1, to the northeast quarter of section 32. Sullivan lake is the largest body of bad water that I know of in this north country, it is muddy, clay-coloured and alkaline; and nearly as thick as syrup. There is no good surface water in this part of the township. The soil near the lake is second and third class, but fairly good along the eastern boundary and the northeast corner. The soil is clay loam with very hard sun-baked clay subsoil. There is no timber worth mentioning only scattered clumps of willow and small poplar. The nearest wood for fuel or fencing is about five or six miles to the north. There is a coal seam in township 37, range 15, on the north arm of the lake. I discovered no minerals or stone, with the exception of scattered boulders. Large game is scarce, but there is any amount of waterfowl and prairie chicken. The first frost I noticed this season in this part of the country was on July 19, which was very light. A good road runs along the north side of Red Deer river via Tail creek from the Calgary and Edmonton railway through to this part of the country. There are a few dry water courses with standing pools of water. The land is undulating.—*A. McFee, D.L.S., 1904.*

Township 45.—This is the last township that I reported and is at a distance by trail of about eighty miles from Wetaskiwin. I arrived there about the end of November and as the country had been swept over by fire, I found it necessary to rent a stable and buy feed for my horses. The township is slightly rolling and is covered with scattered willow and poplar scrub. Most of the old mounds were found and all corners were established. The soil is principally black loam, but for about a mile around Wavy lake it is either gravel or clay.—*G. J. Lonergan, D.L.S., 1904.*

Township 58.—There is a wagon road and telegraph line from Edmonton to Saddle lake which passes through the corner of this township, crossing the Saskatchewan at Fort Saskatchewan, and again at Pakan, by means of current ferries. It is about 88 miles by this road from Edmonton to the centre of the north boundary of the township at which point the road enters the township from the north. This road is very good from Edmonton to the Fort, a distance of 18 miles, fairly good from the Fort to Wostock, a distance of 33 miles, but so bad as to be almost impassable in places, from Wostock to Pakan, a distance of 24 miles and again fairly good from Pakan to the point referred to, a distance of 13 miles. The Saskatchewan flows through this township and affords the best means of transporting heavy freight from Edmonton, such as lumber or settlers' effects. The soil consists of a varying thickness of black loam on a clay subsoil, covered for the most part with poplar and willow scrub which may easily be cleared off and is adapted for mixed farming. The quarter sections adjoining the southerly 4 miles of the central meridian comprise a great deal of particularly fertile low lying land, which supports a heavy growth of natural grass at the present time, and only requires draining to make it fit for any class of agriculture. There is a thick fringe of heavy spruce and poplar timber along both banks of the Saskatchewan, but otherwise there is no timber of any value in the township. With the exception of the hay meadows adjoining the central meridian, already alluded to and that which grows on the southerly slopes of the hills, which are for the most part open, there is not much hay in this township; what there is seems to be of good quality. The Saskatchewan has an average width of 750 feet, and at ordinary

stages of the water, has a mean depth of 4 feet and a surface current of $3\frac{1}{2}$ miles per hour. It has steep banks, averaging 100 feet in height, closing right in on the channel which is well defined and clear of obstructions. There is no land in this township liable to be flooded. With the exception of two lakes in the southeasterly corner of the township which are distinctly alkaline, the alkali in the streams and ponds found within it, is not strong enough to make the water unwholesome. There are no falls or rapids available for the generation of power in this township. This section of the country is at the present time liable to summer frosts, but it seems certain that as the surface is cleared, drained and ploughed, this liability will steadily decrease, and finally cease to exist. I know of no coal in this township, but there is coal in township 58, range 17, which is mined from surface outcroppings and used locally to a certain extent. There is any amount of wood fuel available for many years to come. There are outcroppings of stone along the banks of the Saskatchewan, but I do not know of what kind it is; I know of none other in the township. No minerals were observed in this township. This township is too thickly settled to allow much game to be found on it. The township is almost entirely taken up by Russians, Galicians and Bukovinians (Austrians) without regard to the reservations from homestead contained in the regulations of the Crown. In taking up a homestead their only idea seems to be to get as near as possible to the last settler of the same race as themselves and, in consequence of this, there are, in some cases, three of them having houses built on the same quarter section. Those in this township have only been in the country three or four years—few of them are naturalized and a still smaller proportion of them can speak English; in the summer the wife lives and works on the homestead, while her husband goes away to work for wages as a section man on the Canadian Pacific railway; in the winter they enjoy an infinite capacity for loafing and visiting one another's homes. On the whole, and judging from the good work done in older settled districts by others of the same people, I should consider them desirable settlers.—*R. W. Cautley, D.L.S., 1904.*

Township 60.—There are no wagon trails leading to the township, but from a settler's house situated on section 36, township 59, range 16, there is a pack trail leading to township 60, range 15, which crosses sections 6, 8, 17 and 20. The soil is of a sandy or sandy clay nature overlaid with three or four inches of black loam and is generally stony in nature. The township is for the most part unsuited for agricultural purposes, only occasional patches being fitted for mixed farming. The surface is generally rolling in character covered with poplar from three to eight inches in diameter, with willows and some bluffs of jackpine; there is a great deal of muskeg and swamp land, especially to the north of the township, which is covered with scrubby spruce and tamarac. There is no timber of any commercial value. There is no hay. The water is fresh and is to be found in Stony creek (which is twenty-five links wide, one foot deep with a current of three miles an hour) on sections 25 and 26 also in numerous permanent lakes on sections 8, 17, 19, 25, 26, 27, 28, 35 and 36. There is no land liable to be flooded. There are no water falls nor any water power. There is a good deal of muskeg in and surrounding this township, which might cause summer frosts. Wood for fuel can be obtained on every section. There are no coal or lignite veins. There are no stone quarries. There are no minerals of any economic value. Moose and deer are to be found.—*J. L. Côté, D.L.S., 1904.*

Range 16.

Township 4.—This township was reached by trail along the Alberta Railway and Coal Company's railway from Stirling to Brunton, thence easterly to the township. The road is good. The soil is clay loam with a clay subsoil, producing grass and is suitable for grazing purposes only. The soil is stony in the vicinity of Verdigris

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coulée. The surface is prairie with no timber or scrub of any kind. There is no hay on account of the township being very dry. There are no springs, streams or lakes, except Verdigris lake, which is unfit for use. The surface is high and not liable to be flooded. There are no water powers. The climate is hot and dry in summer with no summer frosts, and cold and dry in winter. The snow fall is kept light by the influence of the Chinook winds. Coal may be obtained at Lethbridge. There are no coal or lignite veins in the township. There is an inferior sandstone in Verdigris coulée. No minerals were found. There are some antelope in this vicinity.—*R. J. Gordon, D.L.S., 1904.*

Township 58.—There is a wagon road and telegraph line from Edmonton to Saddle lake, which runs along the westerly boundary of sections 6 and 7 in this township. It is about 74 miles from Edmonton to the northwest corner of said section 6, by this road, which is in fairly good condition, from Edmonton to Wostock, a distance of 51 miles, but so bad as to be practically impassable with a loaded wagon from Wostock to the point referred to, a distance of 23 miles. Saskatchewan river flows through this township, and affords the best means of transporting heavy freight from Edmonton, such as lumber or settlers' effects. The soil consists of a varying thickness of black loam on a clay subsoil, and in sections 1, 2, 4, 6 and 7 is particularly deep and rich. The surface of this township is an almost level plateau, about 200 feet above the river, and is almost entirely covered by dense poplar and willow woods, and brulé, especially is this the case in all the central sections. There are a great many sloughs and marshes scattered all through the township. There is a thick fringe of heavy spruce, jackpine and poplar along the right bank of Saskatchewan river, and a good deal of poplar all over the township suitable to the needs of a settler, for building houses, stables and fences. There are patches of good hay land, interspersed among the bush, in sections 6 and 7, and a few big hay sloughs in sections 4 and 9, but with these exceptions, there is very little hay in this township, although loose horses or cattle would be well enough in the bush in many places. Saskatchewan river has an average width of 750 feet, and at ordinary stages of the water, has a mean depth of 4 feet and a surface current of $3\frac{1}{2}$ miles an hour. The channel is well defined and clear of obstructions throughout, except in section 36, where an island occurs and where there are some big boulders in either channel, which make it necessary to be careful in taking a boat or raft down the river. There is a great deal of surface water in this township, but only one small creek in the southeasterly corner. There is no land in this township liable to be flooded. There are no falls or rapids available for the generation of power in this township. This section of the country is, at the present time, liable to summer frosts, but it seems certain that, as the surface is cleared, drained and ploughed, this liability will steadily decrease, and finally cease to exist. I know of no coal in this township, but there is coal in township 58, range 17, which is mined from surface outcroppings, and used locally to a certain extent. There is any amount of wood fuel available for many years to come. There are outcroppings of rock along the banks of Saskatchewan river, which seems to be a kind of soft sandstone. I know of no other in this township. I know of no minerals in this township. One of my party saw a moose in this township, and there are rabbits, coyotes, deer, grouse and prairie chicken. There are 6 or 7 Canadian and American settlers in the southwesterly corner of this township, of the best kind—farmers of experience and a little capital and stock to start in with. The rest of the township is, I believe, in a fair way to be absorbed by Galicians, of whom there were always several on the line—generally between the instrument and my back picket.—*R. W. Cautley, D.L.S., 1904.*

Range 17.

Township 27.—This township may be reached by either of two good trails from Gleichen or Bassano; the former trail is more generally used. The soil other than in

the ravines and river flats is of about four to six inches sandy loam with clay subsoil, and in the river flats and ravines it is clay growing very little or no vegetation. The surface is generally hilly with deep ravines or canyons traversing it in a northeasterly direction; several of them start south of this township and cross through to Red Deer river and in these cases the ravines are impassable barriers to any horse conveyance. There is very little scrub and the only timber is black poplar, which is found only along Red Deer river in bits of margin. There are little patches of hay scattered all through on the upper lands. Red Deer river running through the township supplies the fresh water generally for live stock and in nearly all the ravines there are springs, the water being nearly all fresh at the heads of the ravines and all becoming alkaline as it approaches the river. Red Deer river does not often overflow its banks as the channel seems of sufficient capacity to carry off all the overflow. The river this year averages about six chains in width with banks from ten to forty feet high. The weather was all warm and I saw no signs of summer frosts. Fuel may be got scattered along the river banks and in some of the ravines, but this supply is very meagre. The settlers in the future will have to depend more upon coal, which is to be found in abundance in township 27, range 18. Sections 17, 21, 20, 29 and 30 have coal seams exposed in all the canyons running through them and coal is frequently washed down and deposited in the river. The coal seems to be all soft and very much like the variety known and sold in Ontario as cannel coal. Stone quarries may be opened up in many places along the cut bank hills of the river, which contain much freestone. I saw no other minerals. The usual game birds, such as prairie chicken, duck and geese are found here. I saw one deer. Antelope are scarce. There is no water power available anywhere in this township.—*John J. Dalton, D.T.S., 1904.*

Township 59 (Sections 5, 6, 7, 8, 17, 18, 19 and 20).—There is a wagon trail from Victoria or Pakan to Smoky lake, which passes through the above sections. It was covered with snow to a depth of two feet when I was on the ground, so I cannot inform you of its condition. The soil consists of a light covering of black loam overlying a clay subsoil, and the surface is gently undulating, covered with small brûlé and very marshy in places. The timber on these sections is almost entirely brûlé, and fit only for firewood. There is very little hay in these sections, what there is being along the banks of Smoky creek. Smoky creek flows through sections 7 and 8, but its bed is so marshy and ill-defined that it is impossible to describe it with any accuracy. I believe it is the only outlet of Smoky lake, in which case it must carry a good deal of water, and it has low sloping banks. There are no indications of available water power in these sections. This section of the country is, at the present time, liable to summer frosts, but when once it is cleared, drained and ploughed, this liability is almost certain to cease. I know of no coal in this township. There is any amount of wood available for fuel for many years to come. I know of neither stone nor minerals in this township. I saw no game in these sections. There is a deserted house on Smoky creek, but I saw no signs of other settlers here.—*R. W. Cautley, D.L.S., 1904.*

Range 18.

Township 27.—This township may be reached by either of two good trails from Gleichen or Bassano: the former trail is more generally used. The soil other than in the ravines and river flats is about four to six inches sandy loam with clay subsoil, and in the river flats and ravines it is clay growing very little or no vegetation. The surface is generally hilly, with deep ravines or canyons traversing it in a northeasterly direction; several of them start south of this township and cross through to Red Deer river and in these cases the ravines are impassable barriers to any horse conveyance. There is very little scrub and the only timber is black poplar, which is found only

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along Red Deer river in bits of margin, but on the southwest quarter section 32, there is about twenty acres of this kind of timber, which runs from six inches to about twenty inches in diameter. There are little patches of hay scattered all through on the upper lands. Red Deer river, running through the township, supplies the fresh water generally for live stock and in nearly all the ravines there are springs, the water being nearly all fresh at the heads of the ravines and all becoming alkaline as it approaches the river. Red Deer river does not often overflow its banks as the channel seems of sufficient capacity to carry off all the overflow. The river this year averages about six chains in width with banks from ten to forty feet high. The weather was all warm and I saw no signs of summer frosts. Fuel may be got, scattered along the river banks and in some of the ravines, but this supply is very meagre. The settlers in the future will have to depend more upon coal, which is to be found in abundance. Sections 17, 21, 20, 29 and 30 have coal seams exposed in all the canyons running through them and coal is frequently washed down and deposited in the river. The coal seems to be all soft and very much like the variety known and sold in Ontario as cannel coal. Stone quarries may be opened up in many places along the cut bank hills of the river, which contain much freestone. I saw no other minerals. The usual game birds, such as prairie chicken, duck and geese are found here. I saw one deer. Antelope are scarce. There is no water power available anywhere in this township.—*John J. Dalton, D.T.S., 1904.*

Range 18.

Township 58.—There is a wagon road from Edmonton to Victoria or Pakan—a much more distinctive name—on the north side of the Saskatchewan, which passes through the Lobstick settlement. This road is in fairly good condition from Pakan to the centre of this township, a distance of about eleven miles, but I believe it is in very poor condition westerly from this township to a point opposite Fort Saskatchewan, where it joins the main road; I have not been over it. There is no wagon road to that part of the township south of the Saskatchewan, but a good winter trail to Star, a distance of about 16 miles from the centre of the southern boundary of the township, and there is a good wagon road from Star to Edmonton, passing through Fort Saskatchewan, a distance of 42 miles. The Saskatchewan passes through this township, and affords the best means of transporting heavy freight to it from Edmonton, which is the distributing centre of this district. In that part of this township lying north of the Lobstick settlement, the soil is composed of a light covering of black loam overlying a clay subsoil; the surface is entirely covered with poplar woods and thick scrub, together with numerous sloughs and marshes. In that part of the township lying to the south of the Saskatchewan, the soil is very light as a rule, as there is a good deal of open and partly open land, it would seem best for grazing purposes. In the northerly part of the township there is very little useful timber except for fuel; what there is is almost all poplar—green and dry. In the southerly part there is some jackpine and spruce and a fair amount of poplar, all suitable for building houses, stables and fences. There is no hay in that part north of Lobstick settlement. In the southerly part there must be a good deal of hay in the proper season, but the soil is light. The party were on snowshoes during the survey of this township (February and March). In the northerly part of the township are numerous fresh water sloughs and marshes. There is a good creek in the southerly part—12 feet wide, $2\frac{1}{2}$ to 3 feet deep, with a current of 4 miles per hour and a valley about 75 feet deep. The Saskatchewan, which flows through the township, has such a steep and roughly broken bank for its southerly shore, that its presence cannot be said to enhance the value of the land adjacent to it, on that side. None of the township is subject to floods. It is probable that enough power to run a grist mill could be generated

from the creek referred to in the preceding paragraph, since it must have a steep gradient near its entrance to the river. This section of the country is liable, at the present time, to summer frosts, but it seems certain that, as the surface is cleared, drained and ploughed, this liability will steadily decrease until it finally ceases to exist altogether. I know of no coal in this township, but there is coal in township 58, range 17, west of the 4th meridian which is mined from surface outcroppings and used locally to some extent. There is any amount of wood available for fuel for many years. No minerals or rock were observed. The township is pretty well hunted out, owing to the presence of the half-breed settlement in its centre. There were no settlers on that part of the township surveyed by me.—*R. W. Cautley D.L.S., 1904.*

Township 59.—There are no good summer trails for reaching this township, but there are two winter trails, one of which commences in the centre of Lobstick settlement and runs northeast striking the most southerly part of Smoky lake; the other commences at Victoria and follows the north shore of Smoky lake. This trail can be used in summer, but is poor; neither trail goes beyond the lake and both are used only by hunters. The soil is for the most part a black loam with a clay subsoil and is suitable for mixed farming. The surface is nearly all heavily timbered, although in the southwest corner of the township the timber is lighter and there is a good deal of willow brush. The timber is chiefly poplar and cottonwood from three to eight inches in diameter, but in sections 22, 27 and 28 adjoining the lake there is some spruce mixed with the poplar averaging ten inches in diameter suitable for building purposes. In dry seasons the shores of Smoky lake furnish up to sixty tons of hay, but the amount and quality depend on the season. The water of Smoky lake is fresh and is quite sufficient and permanent. Smoky lake creek, which is the outlet of the lake, is twelve feet wide, two feet deep and rate of current about three miles an hour. The land is not liable to be flooded. No water powers can be developed in the township. The climate is good and summer frosts are rare. The available fuel is wood and it can be found all the township. There are no stone quarries. No minerals of any value have been discovered in the township. There are some partridge and grouse, and moose are sometimes found. There are some fish in the lake but they are not plentiful.—*J. L. Côté, D.L.S., 1903.*

Range 19.

Township 58.—The trail from Edmonton to Victoria follows the north shore of Saskatchewan river and crosses township 58, range 19, on sections 31, 32, 33, 34, 35, 26 and 25, and is generally in a fair condition. The soil on the north side of Saskatchewan river is generally a black loam with a clay subsoil. While on the south side, the subsoil is generally sandy. It is suitable for mixed farming. The surface is generally undulating except for the hills of Saskatchewan river and two or three gullies coming to it. The north side of the river is a scrubby prairie with large bluffs, while the south side is thickly wooded. On sections 1, 2, 3, 4 and 5 there is a good deal of spruce suitable for building purposes. From thirty to fifty tons of good hay can be cut along the north side of Saskatchewan river. Waskatenow river is a small stream of fresh water twenty links wide, and twelve inches deep with a current of four miles an hour and flows into Saskatchewan river in section 33. No land is flooded. No water power can be developed. There are no water falls. There is no summer frost. Wood for fuel is available on every section. There is no coal or lignite visible in the township. There are no stone quarries. There is no mineral of economic value. Moose can be found on the south side of the river.—*J. L. Côté, D.L.S., 1904.*

Township 59.—The trail which follows the north side of Saskatchewan river, from Edmonton to Victoria touches this township on section 4 and follows the south boundary for a couple of miles. The soil is a rich black loam with a clay subsoil.

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The surface is generally level or undulating and is timbered, with the exception of a small prairie here and there. Some spruce are scattered all through this township and are suitable for building purposes. There is no hay. Waskatenow creek enters the township in section 31 and leaves it in section 3. It is a stream of fresh water about 25 links wide, 18 inches deep and a current of 3 miles an hour. There are also numerous marshes and swamps in this township. There is no land flooded. There is no water power to be developed. Summer frost is very rare. Wood as fuel can be had on every section, but no coal or lignite was discovered. There are no stone quarries. No mineral of any description was located in this township. Grouse and moose are found in the township.—*J. L. Côté, D.L.S., 1903.*

Range 20.

Township 58.—The trail following the north shore of Saskatchewan river from Edmonton to Victoria crosses sections 3, 10, 14, 23 and 25 and is generally in fair condition. About 6 inches of black loam cover a gravelly clay subsoil, except for a belt of about one mile along the Saskatchewan where the subsoil is sandy. The surface is generally undulating except for the Saskatchewan hills and a few gullies coming into it. It is suitable for mixed farming. A belt along the north side of the Saskatchewan is a scrubby country but the remainder is thickly wooded with poplar from three to eight inches in diameter, and willows. There is no hay. There are numerous sloughs and swamps of fresh water, which in most cases could be easily drained. Namepi creek flows through sections 31, 32, 33, 34, 27, 26 and 23 and is a creek of about 30 feet wide, three feet deep and a current of three miles an hour. Saskatchewan river flows through sections 12, 13, 24 and 25. There are no water falls or water powers. No summer frost was observed. No coal veins, no stone quarries and no minerals of any value were observed. Moose and bear can be found here.—*J. L. Côté, D.L.S., 1904.*

Range 22.

Township 64 (north outline).—The country descends gradually to Tawatina river which is crossed in section 31, and then gradually ascends the east side of the valley, the top being reached about the middle of section 32. After this, although not as swampy as further west, the country is very poor, with a great deal of stone, and is third class. The timber has all been burnt and scrub has grown up.—*J. K. McLean, D.L.S., 1904.*

Township 65 (east and north outlines).—Section 1 is stony and covered with a heavy growth of scrub. A small creek is crossed on section 12, when the country becomes much better. A very good area of country is met, which continues to the middle of section 24. The country is then broken by a large muskeg which continues some distance into section 36. Along the north boundary the land to the south is poor, but towards the north is slightly better. However the ridges are very stony and the areas that are suitable for cultivation are limited. The main trail to Athabaska Landing is crossed on section 32 and Tawatina river at the corner of sections 33 and 34. The valley of Tawatina river is here somewhat rough and hilly. Ascending the valley the country has not the appearance of being of much value for agricultural purposes.—*J. K. McLean, D.L.S., 1904.*

Township 65.—Tawatina river enters this township in the southeast quarter of section 6, runs northeast to section 15, thence nearly north, leaving the township at the northeast corner of section 33. It is a very crooked stream, from 40 to 60 links wide with sharp cut banks 8 to 12 feet high. The valley is from one to one and a half miles wide with rough broken slopes, reaching an altitude of 200 to 250 feet above the river. All west of the river is rough and hilly, being really a succession of ridges with muskeg in the hollows. The general trend of the ridges is north and south. The soil is light and

stony. The two tiers of sections on the east side of the township are fairly level; there are some muskegs. The soil is generally clay. Little Pine creek runs through sections 11 and 12. The whole township with the exception of the muskegs is covered with heavy poplar, alder and willow scrub with clumps and scattered trees of poplar. The muskegs are covered with small spruce and tamarac and considerable alder brush. There are some scattered spruce trees 10 to 14 inches along Little Pine creek. The trail from Edmonton to Athabaska Landing runs through sections 6, 7, 18, 19, 20, 29 and 32. A pack trail from Athabaska Landing to Lac LaBiche runs through the north-east quarter of the township. Good grass, pea and vetch vines grow in the greater part of the township. Only patches are fit for cultivation. Three squatters have settled in this township. There are no stone quarries or minerals of any kind. Large game is scarce. Rabbits, prairie chickens, and coyotes are numerous. Traces of mink were seen along Tawatina river.—*Wm. R. Reilly, D.L.S., 1904.*

Township 66 (east outline).—The surface is nearly level or slightly undulating. It has alternate stretches of poplar scrub and spruce and tamarac muskeg. A large lake surrounded by muskeg was crossed in section 13, and a hay marsh in section 36. Soil is sandy and too swampy for cultivation.—*W. R. Reilly, D.L.S., 1904.*

Range 23.

Township 43.—This township is mostly covered with poplar from four to six inches in diameter. The surface is undulating and there are many lakes and ponds. One rancher is running about four hundred head of cattle and had every appearance of prosperity. Asker post office is situated on section 15, and has a weekly mail service. On section 10 there is a modern school-house with an average daily attendance of about thirty children. A good trail is opened up along the boundary connecting with the town of Ponoka.—*G. J. Lonergan, D.L.S., 1904.*

Township 44.—Some of the best farming land in Alberta is situated in this township and as a consequence there is no vacant land. Soft water is found at a depth of fifty to seventy-five feet. In the southeast part of the township there are numerous small ponds while Battle lake takes up parts of sections 3 and 4. The soil is a good sandy loam and the crops appear to be about ten days in advance of those of other places.—*G. J. Lonergan, D.L.S., 1904.*

Township 63.—(East outline).—The first mile and one-half is covered with scrub and is third class. After this the whole of this boundary is muskeg with slight intermissions. The muskegs extend west nearly to and parallel with the Athabaska Landing trail, and the hunters say they extend east to the head of Sucker creek, a small stream running into the Saskatchewan river.—*J. K. McLean, D.L.S., 1904.*

Township 64 (North and east outlines).—Section 31 is very poor, and broken and swampy. A small creek running northwest towards the muskeg creek is crossed on the commencement of section 32. Ascending from this creek the country is better across sections 32 and 33. The soil is clay loam with occasional large stones. The timber has all been burnt and a very heavy growth of poplar and willow scrub has grown up. Section 34 is badly broken by swamps, but 35 and 36 are better. The timber has been burnt and scrub now covers the country. At one time this country has been covered with very large timber. Several spruce trees about three feet in diameter, and still green were seen. Along the east boundary through section 36 we descend gradually along the side of the valley of Tawatina river. The unsurveyed trail to Athabaska Landing is crossed in section 36 and again in section 25. Small areas of good land are found along this river with occasional squatters. Tawatina river is crossed on section 24. The line gradually ascends the east side of the valley, the country being covered with a thick growth of scrub. The soil is clay loam and the country is fairly good, but is only class three. The surveyed trail to Athabaska Landing is crossed on section 1.—*J. K. McLean, D.L.S., 1904.*

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Township 65.—(East outline).—The country is poor along the east boundary of this range. The timber has been burnt and poplar and willow scrub has grown up. The country consists of stony ridges running northerly with swamps intervening.—*J. K. McLean, D.L.S., 1904.*

Township 65.—(North outline).—Surface undulating, alternate stretches of poplar scrub and spruce and tamarac muskeg. Soil generally light, some good spots of sandy loam. Muskeg creek crossed at quarter post on 36 is a stream 40 to 50 links wide with strong current running in a rugged gulch 100 feet deep and 8 to 10 chains wide. A large lake surrounded by muskeg is crossed in section 31. Muskeg creek flows out of the east side of this lake. There are a number of good hay marshes in the interior of the township, and some patches fit for cultivation.—*W. R. Reilly, D.L.S., 1904.*

Township 66.—(East outline).—The country is much broken by swamps and muskegs along this line. None of the sections being more than third class. Athabaska river is crossed on section 25 and is about a quarter of a mile wide. The country is very poor north of the river. The timber has been jackpine on a sandy soil. The timber has been burnt of late years and much of it is now fallen.—*J. K. McLean, D.L.S., 1904.*

Township 66.—(East outline).—Going north the surface is undulating, covered with alternate stretches of poplar scrub, and spruce and tamarac muskeg, to river. North of the river, it is rolling to undulating (pretty rough for a half mile north), covered with heavy slash or windfall with scrub. Muskeg creek is crossed in deep ravine on north half of section 1. Athabaska river, 20 chains wide with long sloping banks is crossed in section 25. Some hay marshes lie in the centre of the township.—*W. R. Reilly, D.L.S., 1904.*

Range 24.

Township 43.—This township is mostly covered with poplar from four to six inches in diameter. The surface is undulating and there are many lakes and ponds. One rancher is running about four hundred head of cattle and had every appearance of prosperity. A good trail is opened up along the boundary connecting with the town of Ponoka.—*G. J. Lonergan, D.L.S., 1904.*

Township 45.—This half township is on the east side of the Ermine Skin Indian reserve, and is all taken and about eighty per cent is under cultivation. The farmers show every indication of prosperity and their dwellings and outbuildings would compare favourably with those of eastern Canada. The soil is a sandy loam and in places a black loam. Good soft water may be had by boring seventy-five feet or deeper. A boring machine for wells was kept in operation all last summer.—*G. J. Lonergan, D.L.S., 1904.*

Township 47.—The thriving town of Millet is situated in the northwest corner of this township. It is the trading centre for the people as far west as Pigeon lake and on the east to Coal lake. The Calgary and Edmonton railway cuts the township in a northwesterly direction, while Pipestone and Bigstone creeks join on section 10 and continue to flow in a southeasterly direction. The soil is a light sandy loam and the township is not so thickly covered with scrub as the fore-mentioned ones. This advantage was quickly taken by the settlers who have not much capital, as they can get a fair crop the second year and consequently all the land is homesteaded or bought.—*G. J. Lonergan, D.L.S., 1904.*

Township 48.—This township is settled almost entirely by Germans and it was necessary to engage the services of an interpreter. but once the work was started I had no more difficulty. About eighty-five per cent of the land is taken up but the settlers have been there but a short time and as yet they have very little improvements.

The soil is good, being mostly black loam. Two large lakes and numerous small ponds and an abundant supply of hay were found. A sufficient quantity of good timber is scattered through the township.—*G. J. Lonergan, D.L.S., 1904.*

Township 63.—(East outline).—Through sections 1 and about one-half of 12 on the east boundary of this township the country is fair agricultural land, but it is very stony. This land extends east to the valley of Towtinow river and for some distance east. The remainder of this line is very much broken by swamps and muskegs with occasional ridges. The timber has been generally destroyed by fire. A growth of poplar scrub now covers the ridges, while small spruce with willows cover the lower ground. This township is third and fourth class.—*J. K. McLean, D.L.S., 1904.*

Township 64.—(East outline).—The boundary of this township is almost entirely swamp and muskeg, with muskeg lakes. On the few ridges poplar and willow scrub is found. This is a fourth-class township.—*J. K. McLean, D.L.S., 1904.*

Townships 65 and 66.—(East outline).—The east boundary of township 65 starts on a gradual slope to the north, covered with thick poplar and willow scrub. Soil, sandy, slightly stony in spots, 3rd class. A small creek is crossed at quarter post on the east boundary of section 12, and muskeg met a few chains farther north. Alternate patches of undulating ground covered with poplar scrub, muskeg covered with spruce scrub and patches of spruce and tamarac trees 6 inches to 10 inches in diameter occur and extend for a considerable distance on either side of this line. Continual muskeg lies across north part of section 12 and on sections 13, 24, 25, 36 and 1. Township 66 runs into poplar scrub on the south side of section 12, with spruce and tamarac muskeg at a distance of from 10 to 20 chains on either side. Alternate spruce and poplar scrub from this to Baptiste creek 'a stream 30 to 40 links wide, 4 to 5 feet deep in spring time,' crossed in the north half of section 25. On the north side of this creek a belt of spruce was run through for about half a mile extending for a short distance on either side of the line. This belt contains timber from 12 inches to 24 inches in diameter suitable for lumbering purposes, and is the only timber suited for that purpose met with in the survey. From this belt of timber to the township corner, ground rolling, brûlé overgrown with poplar scrub. Only small patches along this line fit for cultivation. Speaking generally the line runs across township 65 in a depression between a gradual rising ground on the east side and a range of high hills extending far into the township on the west side. Baptiste lake is in the north part of township 66, range 24. I was told that a settler is making a success of farming near this lake, his only road is a packtrail to the landing. The land is reported to be much better further west. Small wild fruits, strawberries, raspberries, red currants, black currants and gooseberries grow in abundance here.—*W. R. Reilly, D.L.S., 1904.*

Range 25.

Township 43.—The town of Ponoka is situated in this township on the west bank of Battle river, in section 4, and is a thriving and industrious centre, having two banks, two sawmills and many large stores. The soil is rich sandy loam. Fine crops and splendid gardens spoke plainly for the success of the settlers. All the land is taken and most of the road allowances are opened and in places the road was graded.—*G. J. Lonergan, D.L.S., 1904.*

Township 44.—This township is covered with thick poplar and willow scrub with but few large trees. The soil is light sandy loam and deteriorates towards the west. The surface is very rolling with ponds and creeks in the valleys, all of which drain into Battle river. About twenty per cent of the land is settled and as the farmers have been there but a short time they have made but few improvements. However, in every case they appear to have realized their expectations and are satisfied.—*G. J. Lonergan, D.L.S., 1904.*

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Township 47.—In this township the soil is sandy loam, and about sixty per cent of the land is taken up by settlers. It is covered with a dense growth of poplar and willow scrub and in places poplar from six to eight inches in diameter. The township is traversed from east to west by Pipestone creek, which has high banks on both sides forming a valley about three-quarters of a mile in width, the bottom of which is low and has numerous lakes.—*G. J. Lonergan, D.L.S., 1904.*

Township 48.—This township is practically similar to the one east of it in every way, except that there are fewer settlers.—*G. J. Lonergan, D.L.S., 1904.*

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Range 26.

Township 44.—This township is covered with thick poplar and willow scrub with but few large trees. The soil is light sandy loam and deteriorates towards the west. The surface is very rolling with ponds and creeks in the valleys, all of which drain into Battle river. About twenty per cent of the land is settled and as the farmers have been there but a short time they have made but few improvements. However, in every case they appear to have realized their expectations and are satisfied.—*G. J. Lonergan, D.L.S., 1904.*

Range 27.

Township 43.—This township is covered with thick poplar and willow scrub with but few large trees. The soil is light sandy loam and deteriorates towards the west. The surface is very rolling with ponds and creeks in the valleys, all of which drain into Battle river. About twenty per cent of the land is settled and as the farmers have been there but a short time they have made but few improvements. However, in every case they appear to have realized their expectations and are satisfied.—*G. J. Lonergan, D.L.S., 1904.*

Township 44.—This township is covered with thick poplar and willow scrub with but few large trees. The soil is light sandy loam and deteriorates towards the west. The surface is very rolling with ponds and creeks in the valleys, all of which drain into Battle river. About twenty per cent of the land is settled and as the farmers have been there but a short time they have made but few improvements. However, in every case they appear to have realized their expectations and are satisfied.—*G. J. Lonergan, D.L.S., 1904.*

Range 28.

Township 43.—This township is covered with thick poplar and willow scrub with but few large trees. The soil is light sandy loam and deteriorates towards the west. The surface is very rolling with ponds and creeks in the valleys, all of which drain into Battle river. About twenty per cent of the land is settled and as the farmers have been there but a short time they have made but few improvements. However, in every case they appear to have realized their expectations and are satisfied.—*G. J. Lonergan, D.L.S., 1904.*

Township 44.—This township is covered with thick poplar and willow scrub with but few large trees. The soil is light sandy loam and deteriorates towards the west. The surface is very rolling with ponds and creeks in the valleys, all of which drain into Battle river. About twenty per cent of the land is settled and as the farmers have been there but a short time they have made but few improvements. However, in every case they appear to have realized their expectations and are satisfied.—*G. J. Lonergan, D.L.S., 1904.*

TOWNSHIPS WEST OF THE FIFTH MERIDIAN.

Range 1.

Township 16.—This township may be reached from either of the railway stations, Nanton or High river, the trails are generally good. The country is very hilly, without timber and very little scrub. The soil is very variable ranging from eighteen inches black loam in the lower places to gravel on the tops of the hills, with clay and gravel subsoils. The water is all fresh. The southern portion of the township is watered by two branches of Mosquito creek, the northern portion by a few strong springs and a few ponds. There is no stream large enough for water power. The climate seems to be suitable for the hardy cereals and vegetables. I saw no indications of summer frosts. Fuel is very scarce as the settlers are using gray willow at the present, and in the near future will have to bring coal from a distance. I saw no beds of stone suitable for quarries and no minerals of economic value. Game is confined to duck and prairie chicken. This township is nearly all subdivided by wire fencing and occupied by ranchers.—*John J. Dalton, D.T.S., 1904.*

Township 23.—There are good roads leading to this township from the Canadian Pacific Railway stations, Okotoks and High river. The soil generally is a sandy loam, which in the lower situations becomes deep black loam, and on the higher ridges stony, and in some places rock protrudes. The surface is generally prairie, but on most of the northern slopes and along the streams there is much scrub and small poplar chiefly of the black variety becoming large along the river flats where it is mixed with scattered spruce and varies from six or eight inches to twenty-four inches in diameter. Hay is cultivated in this township and is pretty evenly distributed over the open country excepting on the higher hills. Water is very good and abundant and well distributed from Elbow river. There is also a convenient supply of water for domestic and ranching purposes from the numerous strong springs rushing out of the ravines. Water power might be obtained almost anywhere along Elbow river, but it would be very difficult to construct dams to withstand the floods, which become very violent and move stone banks or any other impediment down the river, though it appears seldom to overflow its banks. This township is largely cultivated. Coal is the fuel generally used and is found in abundance in several of the adjoining townships. Stone quarries are being worked in the north of section 33, and are to be found also on section 32, along Elbow river. I discovered no minerals. Game is rather scarce, even duck and prairie chicken were not plentiful, but in all these mountain streams two varieties of trout are very abundant. Specimens of one variety are said to weigh eighteen pounds but four or five pounds are more common. The other variety would average about sixteen ounces in the larger streams.—*John J. Dalton, D.T.S., 1904.*

Township 56.—The road from Edmonton to Peace river crosses this township, entering it on section 26 and leaving it on section 32. This road was repaired lately and is supposed to be in a fair condition. It was very bad before this in wet seasons. The soil consists of black loam with a sandy clay subsoil. It is good for farming. There are few muskegs but the lakes are numerous. The ridges are apt to be stony. Sand was found in very few pits. The township is heavily timbered for two-thirds of its area. The heavy timber which consists of poplar being southeast of a line that would run between sections 18 and 26. The rest of the township is covered by brush, bunches of big poplar with occasional open patches. The surface is pretty hilly along the east boundaries of sections 16, 21 and 28. The west and southwest side of the township is but little hilly. There are but few places where hay can be cut in the township. Slough hay is found in sections 9, 10 and 35 but not in great quantities. The water in Sandy lake is good but is bad in all or nearly all the other lakes. There is no important stream in the township and there is no water power. The climate is about the same as

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that of Edmonton. Though I was not in the township in the summer, I am inclined to think that the summer frosts felt in the adjacent townships in June and August must have been felt in this township as well. As there is no coal known in the township the only fuel is dry poplar which is not scarce. We saw no rock or minerals. Ducks must be as plentiful as in the adjacent townships. There were at least six settlers in the northern part of the township in September, 1904. The eastern and centre parts are heavily timbered and hilly though the soil is pretty good; but there is fine farm land in the southwestern and western part.—*Raoul Rinfret, D.L.S., 1904.*

Township 60 (north outline).—From the starting point across section 36 and part of 35 the base line passes over an undulating country covered with poplar of an average of 8 inches diameter; then it enters a floating swamp covering the range to within half a mile of the northwest corner; the remainder is over a level ground covered with poplar and willow scrub. Owing to the great area of waste land this range is practically worthless.—*L. E. Fontaine, D.L.S., 1904.*

Township 72 (east and north outlines).—Sections 1 and 12 lie mostly in a swamp of spruce and tamarac, the timber being, generally, of small size and the land of no value. Sections 13 to 36 are covered with woods of poplar and scattered spruce. The soil is of fair quality though the land is somewhat broken by small swamps of spruce and tamarac. In the same township and range, sections 36 to 31, both inclusive, are timbered with poplar and occasional spruce of fair size, with a few swamps of tamarac, &c. Excepting these swamps the land is slightly rolling and the soil of good quality.—*Edgar Bray, D.L.S., 1904.*

Range 2.

Township 46.—The route at present to reach this township leaves Ponoka and follows road allowances north and west for fourteen miles, thence by trail to Battle river, which follows to Battle lake which lies within the township. The estimated distance from Ponoka is forty miles. The road is bad and the trail is worse; both are being improved yearly. The soil is a strong clay, in most places the humus had been burned off, but grass grows luxuriantly on the burnt places, grain and roots will grow well in this soil. The surface is rolling except near Battle lake where, high, steep hills surround the lake. Nearly all of the township is covered with trees of dead spruce and poplar of large size,—many over three feet in diameter,—and a new growth of poplar, birch and willow. A great deal of the dead timber has fallen and made almost impassable windfalls. Considerable of this dead timber is sound and may be used for house building, or sawn into lumber for settlers' use. On the east side of the township there is considerable green timber, which lumbermen are cutting and floating down Battle river to Ponoka. Sections 1, 2, 12, 14, 35 and 36 contain nearly all the green merchantable timber in the township. There are no hay sloughs, though a rank growth of grass exists through the burnt district; it is not at present available, owing to the fallen timber. The township is well watered by small creeks and numerous springs; the water is good. Battle lake, four miles long, and from twenty to thirty chains wide, nearly crosses the township. The lake is very deep and stocked with whitefish and pike. There are no water powers. Climatic indications are good. The supply of fuel is inexhaustable. No coal or lignite was observed. No stone quarries were observed. No minerals were observed. Game consists of deer, bear and wild fowl.—*Saml. B. Lucas, D.L.S., 1904.*

Township 47.—This township lies immediately to the west of the northwest end of Pigeon lake and in fact the lake cuts into parts of sections 11, 12, 13, 14 and 24. The survey was commenced on August 1 of the present year and completed near the end of the same month. This township is reached by wagon roads from either Leduc, Millet or Wetaskiwin, which during the past dry season have been fairly good for travelling.

The southeast corner of the township is also accessible by wagon from the road leading from Ponoka to Battle lake. The soil consists of a light layer of black loam overlying a subsoil of clay and when the land is cleared should be suitable to the growing of hay and the coarser grains. The land adjoining Pigeon lake in sections 13, 14 and 24 is somewhat lighter on account of the presence of sand and stones. The surface of this township is generally rolling and a goodly portion has been badly burned over rendering it difficult to get about with even pack horses on account of so much fallen timber. The northeasterly half of section 34, sections 35, 36 and 25, and a part of the north half of section 26, comprise all the green bush in the northeasterly part of the township. The timber consists of large poplar up to fifteen inches in diameter with some good spruce up to twenty inches on the stump with occasional trees of thirty inches or more. Throughout this there is some birch of fairly good size. Likewise in sections 1, 2, 11, 12, the north parts of sections 9 and 10, parts of sections 14, 15, 16, 21, 22, 23 and 27 there is found similar timber with some fair sized pitch pine interspersed. Owing to the close proximity of Pigeon lake it would be advisable to reserve this timber for a timber berth or berths if it has not already been done and place it on the market at an early date so that it could be cut before many years thus obviating danger from destruction by fire, in some measure owing to the large areas of dead dry timber almost surrounding these green areas. A small quantity of hay lands is to be found in section 12 adjoining the lake shore. There is also a small patch on the southeast quarter of section 14. Pigeon lake being largely fed by springs and spring creeks its water is of excellent quality. The township is also fairly well watered with creeks, none of which is of any importance in size. Those on the north portion of the township are tributary to Strawberry creek while all the others flow to Pigeon lake. Their water is fresh and of excellent quality. There are no lands that are liable to be flooded to any extent worth mentioning. There are no water powers on any of these streams. The climate is similar to that of the rest of northern Alberta. Slight frosts were noticed in the latter part of August, but potatoes, grown by Mr. John Lee who lives on section 30, township 47, range 1, on the shore of the lake, were not injured in the slightest. Wood is the only fuel available but there is any quantity of it right at hand. There are no stone quarries; and no minerals of economic value were observed. There is practically no game in this township outside of a few grouse and rabbits. White fish of an excellent quality are found in Pigeon lake and quite a business is carried on in supplying the markets at Leduc, Wetaskiwin and Ponoka with this commodity. The only settlers in the township are some Stony Indians who are squatted on section 12. They are quite progressive and expressed their desire to renounce their treaty rights and take up homesteads. At one time the Hudson's Bay Company had a post on Pigeon lake. The ruins of their building is still to be seen on section 24. Pigeon lake is a fine sheet of water nearly fifteen miles long and will doubtless before many years become a summer resort for the residents of the many towns which are rapidly growing up to the east of it.—*B. J. Saunders, D.L.S., 1904.*

Township 48.—This township can be reached by pack trail from Pigeon lake along the Indian trail leading from the above named lake to Wabamun lake. This trail is not in very good condition for travel, being very crooked and filled up with fallen timber in many places. The soil consists of a black loam surface soil overlying a clay subsoil and it should be well adapted to the growing of hay and the coarser grains when the timber is cleared off. The whole surface of the township is timbered and it has suffered less from fires than the adjacent townships to the south and west. The timber is of mixed variety with some good areas of spruce suitable for lumber, with large poplars and some birch. Roughly speaking the east third and west third of the township are covered with green timber excepting parts of sections 5 and 6. In sections 12, 13 and 14 there is a patch of land which if burnt off would be valuable for hay land. The township is pretty well watered with creeks tributary to Strawberry creek, the

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largest of which, a stream known locally as Black creek, reaches a width of twenty-five or thirty links in high water and could no doubt be utilized to drive timber to Strawberry creek. The water of all the streams is of good quality and fresh. In sections 2, 3, 9, 10, 11 and 12, there is quite a large muskeg which has been shewn on some maps as a lake. There is only a very small body of water in this muskeg. It is situated on section 11. There are no water powers in the township. The climate is similar to that of other parts of northern Alberta, and frosts are liable to occur in the latter part of August. Wood is the only fuel available so far as was seen. There are no stone quarries, and no minerals of economic value were met with in this township. Game was very scarce and only an occasional grouse was noticed with the ever present rabbit. This township has no settlers although it is of easy access from Pigeon lake around which a few people have already located.—*B. J. Saunders, D.L.S., 1904.*

Township 56.—The road from Edmonton to Peace river passes about one mile north of the northeast corner of the township. There is a road going through sections 31, 32 and 33, connecting the Peace river road with township 56, range 3. The subsoil is composed of clay and sandy clay, covered by several inches of black loam. Stones were found in only about ten pits. The soil is good for farming. There are some hills in sections 31, 32 and 33, and along the south shore of Nakamun lake, and around Kakinasa lake. The remainder of the township is fairly level or gently rolling. There are no high hills or deep gullies. There is no prairie in the township. The greater part is covered with small poplar, willow and scrub, with scattered big poplar. There is big poplar as a forest, and not scattered, in the southeastern part of the township, and in bunches throughout; the tall timber forming hardly one-third in area. The southern parts of sections 5 and 6 consist of a large muskeg extending into townships 56, range 3 and 55, range 2. Besides the poplar distributed as stated above, there are patches of small spruce and tamarac in different parts of the township. Much hay can be cut in the muskegs and around the small lakes south of Nakamun lake, and in the muskegs situated in the southeast corner of the township. It is all slough hay. There are no streams of importance. The water is bad in the lakes, except in Nakamun, where it is passable. The water in the creeks is fairly good when not too near the lakes out of which it is running. There is no water power. The climate is about the same as that of Edmonton. There were frosts in June and August in township 56, range 3 and township 55 range 3, which must have been felt in this township. The most readily available fuel is the dry wood standing and fallen found in many places in the township. There is no coal known. No stone suitable for quarrying was seen and no minerals. Ducks are numerous. There are likely to be deer and bears, as in the township adjoining. There are four or five settlers in the township. There are many good quarter sections lying south and southwest of the lakes, and the greater part of them would be easily cleared. The ground is not hilly and should be good for farming.—*Raoul Rinfret, D.L.S., 1904.*

Township 58.—The road to the township was the route used during the Klondike excitement. I understand that it is in bad condition during the summer especially if the season is wet. The soil is a sandy and gravelly loam and I should judge it to be very suitable for raising the various grains and vegetables. As a whole it is a very good soil. The land is rolling and the surface is covered with timber. The original growth has been more or less destroyed by fire and is now replaced by a growth of small poplar and thick willows. A fair amount of good spruce, tamarac and poplar however still remains and is available for use. The large poplar is from ten inches to twelve inches in diameter, and the spruce is from ten inches to twenty-four inches in diameter. As far as could be judged in the winter the sloughs contain an excellent quality of wild hay and the supply I judge is plentiful. The water supply is ample. There are quite a number of small creeks. The township is traversed by a creek of considerable size. The northwest corner is traversed by Pembina river which is about 5 chains in width

and there are several lakes of considerable size, in all of which the water is fresh and wholesome. I understand that if the ice jams badly in Pembina river that some of the flats are at times flooded for twenty-four or forty-eight hours. Water power I judge is not available. The indications are that the climate is good. Grain and vegetables are raised every year and summer frosts are rare. The fuel is wood; good poplar, spruce, tamarac and birch can be obtained almost everywhere. No stone quarries, coal or economic minerals were observed, but I am informed that indications exist. Duck, geese, prairie chicken, grouse, rabbits and fish can be obtained in plenty. There are also deer, cariboo, moose, bear and the various fur animals.—*Thos. Drummond, D.T.S., 1904.*

Township 60 (north outline).—Throughout the whole of this range the ground is slightly rolling and heavily timbered with poplar and spruce of 10 and 15 inches diameter respectively. The soil is poor and sandy and rated third class.—*L. E. Fontaine, D.L.S., 1904.*

Township 72 (north outline).—Range 2 has a narrow belt of good land along Moose river in section 34, and another and wider belt along Driftwood river in section 33, each belt being wooded with poplar of good quality. Elsewhere in this range there is nothing except mossy swamps of small tamarac and spruce, mostly dead, with no land of any value.—*Edgar Bray, D.L.S., 1904.*

Range 3.

Township 18.—This township may be reached either from Okotoks or High river by good trails. The soil generally is black sandy loam on the lower flats and extending well up on the hill sides, but on the tops of the higher hills a crumbly sort of rock protrudes and renders the ground almost barren. This township is generally hilly. The hills on the east boundary of section 17 are about seven hundred feet above the river north of them; on the boundary of sections 5 and 6 the ridges are about four hundred feet and on sections 13 and 24 about five hundred feet. This township is, for the greater part occupied by ranchers, and is altogether better adapted for this purpose than any other. The timber is black poplar and spruce located only along Highwood river in small quantities. About one-third of sections 17, 20, 28, 34 and 35, that is south of the river, is covered with scrub. Sections 24, 26, and 27 are about one-eighth brush, the rest of the township is pretty clear, prairie and meadow. Hay is cut on the hills and on the lower levels and is found everywhere, except on the hill tops. The water is fresh; besides Highwood river there is Bull creek in the south and numerous strong springs and ponds. Water powers might be obtained on Highwood river, but it would be extremely expensive to construct the necessary dams. Rock is plentiful, but I saw none suitable for stone quarries. Wood is the chief fuel at present, but coal is procured in the adjoining township a little further down the river. Minerals are not found here. Prairie chicken and partridge with a few duck are the only game found, though trout of large size are caught in the river and are very plentiful.—*John J. Dalton, D.T.S., 1904.*

Township 19.—There are good roads leading to this township from the Canadian Pacific Railway stations, Calgary, Okotoks and High river. The soil generally is a sandy loam, which in the lower situations becomes deep black loam and on the higher ridges stony, and in some places rock protrudes. The surface is generally prairie, but on most of the northern slopes and along the streams there is much scrub and small poplar, chiefly of the black variety, becoming large along the river flats, where it is mixed with scattered spruce and varies from six or eight inches to twenty-four inches in diameter. Hay is plentiful in this township and is pretty evenly distributed over the open country excepting on the higher hills. Water is very good and abundant, and well distributed from Sheep river. There is also a convenient supply of water for

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domestic and ranching purposes from the numerous strong springs rushing out of the ravines. Water power might be obtained almost anywhere along Sheep river, but it would be very difficult to construct dams to withstand the floods which become very violent and move stone banks or any impediment down the river, though it appears seldom to overflow its banks. With the exception of a few oats and hardy vegetables nothing is cultivated owing chiefly to summer frosts. The settlers find ranching the more profitable occupation and pay some attention to it. Coal is the fuel generally used, and is found in abundance in several of the adjoining townships. I discovered no minerals. Game is rather scarce, even duck and prairie chicken were not plentiful, but in all these mountain streams two varieties of trout are very abundant. Specimens of one variety are said to weigh eighteen pounds, but four or five pounds are more common. The other variety would average about sixteen ounces in the larger streams.—*John J. Dalton, D.T.S., 1904.*

Township 20.—There are good roads leading to this township from the Canadian Pacific Railway stations, Calgary, Okotoks and High River. The soil generally is a sandy loam, which in the lower situations becomes deep black loam, and on the higher ridges stony and in some places rock protrudes. The surface is generally prairie, but on most of the northern slopes and along the streams there is much scrub and small poplar chiefly of the black variety becoming large along the river flats where it is mixed with scattered spruce and varies from six or eight inches to twenty-four inches in diameter. Hay is plentiful in this township, and is pretty evenly distributed over the open country excepting on the higher hills. Water is very good and abundant, and well distributed from Sheep river. There is also a convenient supply of water for domestic and ranching purposes from the numerous strong springs rushing out of the ravines. Water power might be obtained almost everywhere along Sheep river, but it would be very difficult to construct dams to withstand the floods, which become very violent and move stone banks or any other impediment down the river, though it appears seldom to overflow its banks. With the exception of a few oats and hardy vegetables nothing is cultivated owing chiefly to summer frosts. The settlers find ranching more profitable occupation and pay some attention to it. Coal is the fuel generally used and is found in abundance in several of the adjoining townships. I discovered no minerals. Game is rather scarce, even duck and prairie chicken were not plentiful, but in all these mountain streams two varieties of trout are very abundant. Specimen of one variety are said to weigh eighteen pounds, but four or five pounds are more common. The other variety would average about sixteen ounces in the larger streams.—*John J. Dalton, D.T.S., 1904.*

Township 45.—This township was reached from the adjoining township to the north by means of pack horses. A pack trail from the valley of Blindman river strikes the township in the northeast corner. There is also a wagon road from Lacombe running through the southeasterly portion of the township. The soil consists of a black loam overlying a clay subsoil and it should be well adapted to the growing of hay and the coarser cereals when the land has been cleared of timber. The surface of the township is rolling with quite a number of small swamps and muskegs. The whole township is covered with timber, but it is somewhat more open in the southerly portions. The timber is of mixed variety, with poplar prevailing, and although considerable fallen timber is found there is not so much encountered as in the townships to the north. The largest trees noticed would not exceed 15 inches in diameter on the stump. There is one lake in this township; it is situated in section 32 with a small portion extending into the township to the north. There are quite a number of creeks in the township, the waters of which with one or two exceptions, flow into Blindman river. These waters are all of good quality and are fresh. Being near the height of land there is little or no current excepting in extreme high water stages, and for the same reason they are not liable to overflow the adjacent lands to any extent. There are

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no water powers. There are no hay lands in the township so far as was seen. Climate is similar to other portions of northern Alberta, and it was exceptionally fine during the survey. I cannot speak as to summer frosts as survey was made in spring time. Wood is the only fuel available from outward indications. No stone quarries were observed, neither were any minerals of economic value found. Game is practically extinct with the exception of a few grouse and rabbits. Owing to the excellent waters found in this township, it should prove an ideal ranching spot if the land was cleared so as to produce feed for horses and cattle in sufficient quantities to warrant settlers locating.—*B. J. Saunders, D.L.S., 1904.*

Township 46.—The survey of this township was commenced by running the north boundary beginning at the northeast corner of the township, which point was reached by cutting a road in along the north boundary of township 46, range 2, west of the fifth meridian, from the wagon road leading from Pigeon lake to Battle lake. This road is only fit for travel during the winter months when the ground is frozen, on account of the number of muskegs and swamps through which it passes. There is also an Indian pack trail leading from the valley of the north branch of Blindman river into the southernly portion of the township. This trail is difficult to travel owing to the amount of fallen timber lying in it, besides it appears to have fallen into disuse during late years. The soil of the township consists generally of a thin layer of black loam over a clay subsoil and is of a rather poor quality owing to its having been burnt by fires. The surface of the whole township is timbered, but the greater part has been badly burned over with the result that fallen timber in depths of from one to six feet and even deeper is met with nearly everywhere, rendering it difficult for anyone to get about on foot to say nothing about using horses. It was no uncommon thing to travel for half a mile or more on the fallen timber without ever putting foot to the ground. Throughout this fallen timber there is a varying growth of small poplar, birch, willow and alder with some pitch pine. The patches of green timber consist of spruce, poplar and birch with some pitch pine and a small quantity of tamarac found in swamps and muskegs. Some of the spruce is of good size making a diameter of 20 inches on the stump. It is located chiefly in the central western portion of the township. There are no hay lands in the township. The township is fairly well watered with small creeks which are more or less permanent according to the dryness of the season ; their water is fresh. A small lake is situated on sections 9 and 10, and there is another in sections 2, 3, 10 and 11. Their waters flow to the northwest. The north end of a third lake lies in section 5. The land adjoining the creeks and the lakes is not likely to flood to any extent during high water. There are no water powers in the township. The climate is similar to that of other portions of northern Alberta, but summer frosts are liable to occur. The only fuel available is wood and no stone quarries were noticed. No minerals of economic value were met with and there is positively no game. In conclusion it may be well to say that without considerable labour intending settlers to this section of the country will find it difficult to make much headway unless the practically worthless growth of small timber is cleared off by fire.—*B. J. Saunders, D.L.S., 1904.*

Township 47.—The survey of this township was commenced in the month of March of the present year, but owing to the nature of the country, work was discontinued in the springtime after the snow had disappeared and the frost had left the ground. The survey was resumed in August and completed in the following month. This township was reached by a road cut by my party along the north boundary of township 46, range 2, west of the fifth meridian, from the wagon road leading from Pigeon lake to Battle lake and is only fit for winter travel when the ground is frozen up, owing to the prevailing swampy nature of the ground over which it passes. The only practicable route into the township would be by using pack horses from Battle lake through township 46, range 2, west of the fifth meridian and through the northeast portion of the township to the west of the latter where there were some indica-

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tions of Indian pack trail having been used, but as it was so nearly obliterated no mention of it is made in the notes. The soil of this township consists of a thin layer of black loam overlying a subsoil of clay and clay loam generally, and it is much deteriorated as a result of forest fires which have swept over this section of the country. It will no doubt be adapted to the growing of grasses and the coarser cereals once the land is cleared. The surface of the township is mostly rolling and it is covered with timber throughout, all of which has been more or less burned leaving only patches of green timber here and there. In the burned sections there is a growth of small poplar, birch and some pitch pine with willows and alders. The green timber consists chiefly of spruce and poplar with some pitch pine. The difficulties experienced in the township to the south of the one in question were repeated in 47, range 3, on account of the great amount of fallen timber met with. There are no hay lands and the township is rather poorly watered there being only two creeks of any importance. One enters on the south boundary of section 2 flows northwesterly and leaves the township in section 19. It is said to flow to Birch lake creek. The other stream is a tributary of Strawberry creek and runs through the northeasterly sections of the township, passing out in section 33. The first mentioned stream reaches a maximum width of 12 feet with a depth of about one and one half feet, while the latter is a stream of less than one third that size. The water in these streams is fresh and palatable and in high water they do not overflow their banks. There are no water powers on these streams. The climate is similar to that of other portions of northern Alberta with a tendency to frosts in August. The only fuel available is probably wood but it is quite possible that lignite could be found along the tributary of Strawberry creek already referred to. No stone quarries were observed, neither were there any minerals of economic value met with. Game is very scarce, and outside of an occasional grouse nothing was seen.—*B. J. Saunders, D.L.S., 1904.*

Township 48.—This township was reached by my party from the township immediately to the south by the north boundary of that township and a temporary pack trail. It can also be reached on the north boundary by following the bare line westerly along the north boundary of township 48, range 2 from where it is intersected by the pack trail leading from Pigeon lake to Wabamun lake, a distance of two miles from the northeast corner of township 48, range 3, but this route is only fit for travel on foot or with pack horses. The soil of this township consists largely of clay, and clay and sandy loams. There is practically no surface black loam, it having been burnt off by forest fires. The soil should, however, be capable of growing hay and the coarser grains when once the timber is cleared off. The surface of the whole township is covered with timber with somewhat less burned and fallen timber than met with in the township to the south. In sections 2, 3, 4, 9, 10, 11, 14, 15, 16 and 22, there is some very good green timber consisting of spruce and poplar chiefly. Sections 3 and 10 have already been selected and applied for as a timber berth or part of one. To the west and east of this area of green timber the country has been badly burned and travelling throughout it one meets with the difficulties experienced in getting through fallen timber. As you proceed north the second growth timber (poplar and birch) becomes larger, and the fallen timber somewhat less, indicating that considerable time has elapsed since fires swept over this portion of the township. There are no hay lands. In this township Strawberry creek or rather two main branches of this stream take their rise each flowing in a general northerly direction. They have been called the east and west branches of Strawberry creek in the field notes. They are comparatively insignificant streams at the south end of the township, but where they cross the north boundary on sections 34 and 32 they have a width of eight and twelve feet respectively. Their water is of good quality but the flow was very small and sluggish at the time of the survey. Both streams could no doubt be improved to enable timber to be floated down during high water in the springtime and early summer. The climate is similar

to that of other portions of northern Alberta. Summer frosts are liable to occur in August. The immediately available fuel is wood but in all probability lignite could be found along one or both branches of Strawberry creek if diligently prospected for. No stone quarries were noticed neither are there any minerals of economic value found. The only game seen consisted of grouse and rabbits.—*B. J. Saunders, D.L.S., 1904.*

Township 49.—This township was reached from the township to the south of it. It is also accessible by pack trail from the pack trail leading from Pigeon lake to Wabamun lake which passes through the northeast corner of the township in section 36. This being an Indian pack trail it has been allowed to fill up with fallen timber and is in consequence very crooked. The soil consists of black and clay loams overlying a clay subsoil and it should be a soil adapted to the growing of hay and the coarser cereals when the land is cleared. The surface of the whole township is rolling, generally speaking, and is covered throughout with timber. Standing and fallen burnt timber is not met with so extensively as in the township to the south although the country has at one time been burnt over probably from fifty to sixty years ago so that it has now the appearance of a green bush country. The timber consists chiefly of poplar from four inches to twelve inches in diameter with spruce, birch and pitch pine interspersed throughout. This timber is only fit for firewood, fencing, logs for buildings, and a small quantity might be used for lumber, but there is not sufficient to advise any areas being set aside for timber berths. There are no hay lands worth mentioning in the present condition of the township although there is fairly good grazing for horses along Strawberry creek in section 13. The township is fairly well watered by creeks, the waters of which are all fresh and of good quality. The east and west branches of Strawberry creek enter the township on sections 3 and 5 respectively, flow northerly and easterly uniting on section 10 forming a stream with a width during ordinary flow of from fifty to seventy-five links. This stream then flows in a northeasterly direction passing out of the township on section 24. It could be utilized without much improvement during high water for driving timber from the south to Saskatchewan river. The banks are high and the river could do no damage by flooding during the high water stages of the stream. There are no water powers in this township. The climate is like that of other portions of northern Alberta, but there would likely be summer frosts in the latter part of August. There is an abundance of wood for fuel, and coal or rather lignite could no doubt be found almost anywhere along Strawberry creek if properly prospected for. An outcropping of lignite was noticed on section 13 in the banks of Strawberry creek. No stone quarries were seen, neither were there any minerals of economic value found. The game in this township is very scarce, and with the exception of an occasional grouse and the everywhere present rabbit nothing was seen. With the opening of roads west from Leduc, this township will doubtless soon be settled by people who are satisfied with small holdings and who are prepared to do a certain amount of clearing of land to enable them to start in a small way.—*B. J. Saunders, D.L.S., 1904.*

Township 55.—This township is easy of access. The public road reaches the east end of lake St. Ann, a few chains south of section 2; thence there is a road going northwards through the whole length, reaching its north boundary in section 34. The subsoil is composed of sandy clay in most cases; decayed moss and other vegetable matters being found in the muskegs. The top soil, black loam, has an average depth of a few inches. That part of the ground not covered with muskeg is good for farming. In no place can the surface be called rough and hilly, though there is a ridge following the north of Lake St. Ann. The rest of the township is rolling and slightly rolling. The township is heavily timbered, except in the southeast and southwest corners, where it is scrubby and covered with a new growth of timber, the only open places being in the hay sloughs. The area of the muskegs is from one-sixth to one-eighth of the township. Outside of spruce and tamarac the only timber found is poplar with occasional

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cottonwood. The poplar is big throughout the township, except in the southeast and southwest corners, and in the muskegs. In these muskegs small tamarac and spruce and scrub are found with willows. A good part of the forest in the south half of the township has much fallen timber. The only hay is slough hay along a string of muskegs and small lakes which extend from the southeast to the northwest corners. Several hundred tons of hay can be cut throughout the township. The water in the lakes is putrid and not fit to drink. The water of Lake St. Ann in summer is full of tiny pieces of grass or moss, which render the water unfit to drink, though it is not as bad as in the smaller lakes. They say that this green matter disappears from Lake St. Ann when the water gets cooler in the fall. The watershed between the Pembina and the Saskatchewan rivers passes through the township; so there is no stream of importance. The water in the creeks is not as bad to drink as that in the lakes. There are no water powers. The climate is the same as that of Edmonton, except that it might be slightly warmer along Lake St. Ann. The nights are apt to be cooler along the muskegs. We had two nights of frost about June 21. There is no coal known to exist but dry wood is common. No minerals were found and no rock in place. Ducks and partridge are found and we saw fresh tracks of bears several times during the summer. The heavy timber will delay the opening up of this township. There are two squatters.—*Raoul Rinfret, D.L.S., 1904.*

Township 56.—A road crosses the whole township from north to south and connects Lakes la Nonne and St. Ann. The subsoil consists of sandy clay covered by an average of a few inches of black loam. Stones are found in the ground on the little ridges. The soil is good for farming. The quality averages a little better than class No. 2. Fire has burned the eastern half of the township (in 1887 some say). This is how Onion prairie was formed. This prairie is about one-third of the township in area with occasional bunches of big poplar, of new growth and scrub. The rest of the township is covered with fairly big poplar with bunches of spruce for lumber in the southwestern part. Onion prairie does not produce much good hay. Slough hay is not abundant as the muskegs are mostly timbered or covered with moss. But a few hundreds of tons could be cut. The water in the creeks is fit to drink. These creeks which were big at the time I surveyed the township, were nearly dried up in October. The only lake wholly in the township has very bad water. There are no water powers. Climate is about the same as that of Edmonton. There was a pretty severe frost for two nights about June 21. No coal is known to exist. Dry wood can be procured nearly everywhere. Dry stumps cover part of Onion prairie. No stone fit for quarrying was seen. No minerals were observed. Two deer were seen. There were tracks of bears, while partridges, prairie chickens and ducks are numerous. There were some 12 settlers in the township on October 1.—*Raoul Rinfret, D.L.S., 1904.*

Township 57.—The road to the crossing of Pembina river and to this township passes through St. Albert, Rivière Qui Barre and the various settlements en route. It is a good road in the winter, but I understand not very good in summer. The soil is a sandy and gravelly loam, which in places is rather light, especially in the southern portion of the township, but as a whole, it is fairly good so far as I could judge in the winter. It is suitable for growing the various cereals and vegetables. The surface is covered with timber. In some places the large timber has been destroyed by fire and has been replaced by smaller poplar. The timber is mainly poplar, but a considerable amount of spruce, tamarac and birch is also found. Plenty of hay can be cut in the sloughs, marshes and old river beds. It is the usual wild hay but it is good. There is a plentiful and permanent supply of good fresh water. Lac la Nonne and Majeau lake are both large lakes. The township is also traversed by various creeks, one of which is of considerable size, and is the inlet and outlet of the above two lakes. Pembina river also runs through section 31. It is a river about four and one-half to six chains in width and a depth of from four to ten feet, and a current which is not very

swift, probably two and one-half miles an hour. There are also numerous small spring creeks. Along Pembina river the bottoms are flooded at times by ice jams to a depth of about two to four feet, but only for a short time in the spring and not regularly. There are no falls and I judge that water power is not available either naturally or by damming. The climate is favourable, and I am informed that summer frosts are rare. The various grains and vegetables are raised annually in a small way. Wood is the available fuel, and it can be procured anywhere. I understand that there is indication of coal at one point on the north shore of Lac la Nonne, but I could not tell on account of the snow. No minerals of economic value were discovered. The various game birds, such as duck, prairie chicken, grouse, geese, &c., are plentiful, as are rabbits. There are a few bear, deer and cariboo in the vicinity, and there are plenty of white-fish and jackfish in the lakes and streams.—*Thos. Drummond, D.T.S., 1904.*

Township 58.—The road to old Fort Assiniboine and further passes through this township, but is not in good order. The soil is good and it is suitable for raising the various grains and vegetables as proved by existing work. The surface is completely covered with timber, namely, poplar, spruce, tamarac, birch and willows, some of which is from eight inches to twenty-four inches in diameter, and suitable for building lumber, rails, fence wood, &c. Many sloughs are found affording, under ordinary conditions, fine hay in large quantities. Many of these sloughs, owing to last years wet season, could not be cut, but this was exceptional. Good wholesome fresh water is plentiful in the shape of numerous small lakes and streams. Pembina river is the only stream of any size. It is from four and one-half to six chains in width and four to ten feet in depth, with a current of about two and one-half to three miles an hour. It traverses the whole township. The bottom land along the river is sometimes flooded in places for a depth of two to four feet, but it is due to ice jams and it only lasts for a few hours. Natural water power is not available and the probability is that the banks are not high enough to allow it to be artificially formed by means of dams. The climate from the reports of settlers is suitable for farming and summer frosts apparently are rare or unknown. A plentiful supply of good fire-wood can be obtained almost everywhere. No minerals of economic value were discovered. Duck, geese, grouse, prairie chicken, rabbits and fish are common, and deer, cariboo, bear and the various fur animals such as mink, otter, martin, muskrat, &c., are also caught.—*Thos. Drummond, D.T.S., 1904.*

Township 60.—North outline,—Across range 3 the line passes over a brulé country covered with a second growth of poplar and willow scrub. On the northwest quarter of section 31 the east shore of Shoal lake is intersected. The soil is similar to that of range 2 and rated 3rd class.—*L. E Fontaine, D.L.S., 1904.*

Township 72.—(North outline).—Range 3 is practically all a mossy swamp, covered mostly with small tamarac and spruce, mostly dead, with soil of no present value.—*Edgar Bray, D.L.S., 1904.*

Range 4.

Township 34.—A trail from Innisfail and also one from Olds (both stations on the Calgary and Edmonton railway) afford easy routes for reaching this township. Bridges across Little Red Deer river have been erected on both of these trails. Both trails, however, are very soft in wet weather. The surface of this township is generally high rolling land becoming very hilly near Red Deer river. Along the valley of the Red Deer very good spruce, up to 14 inches in diameter, is met with. The whole surface of the township is more or less timbered with poplar, spruce, jackpine, balm of Gilead, &c., in large bluffs. There is no prairie, what open land there is being covered with a short growth of willows and scrub. Good hay for pasture occurs all over the township. Some large hay areas (upland) occur in sections 26, 27, 35 and

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36. Hay can be cut in all open areas after the removal of the scrub. The water is good in all the numerous springs, spring creeks and in Red Deer river which flows diagonally across the township. There are also a large number of grass sloughs containing fresh water. There are no falls in Red Deer river, but it has a very strong current. Power could be developed on it, but I am of the opinion that the expense would be too great to make it a paying proposition. From the inquiries I made I consider the country suitable only for ranching. The climate is too uncertain for mixed farming. Grain does not ripen. Wood is the only fuel. Sandstone outcrops were seen in the cut banks of the Red Deer in several places, but there is a large deposit of soil overlying it. No minerals were met with. Tracks of deer were seen, bears are reported, also wolves, numerous chickens, partridge, ducks and geese are found. The soil is black, clay and sandy loam of varying depths, with clay or sand subsoil.—*H. B. Proudfoot, D.L.S., 1904.*

Township 35.—I reached the above township from Markerville P. O., on Medicine river, from there west to Rocky Mountain House trail, thence south following this trail about three miles. From this point it was necessary to cut a new road across the valley of Raven river into and through the above township. This road might be made passable for summer travel with a little work and a bridge over Raven river. The soil in this township is a light, sandy loam well adapted for dairy and mixed farming, owing to an abundance of springs and spring creeks, which rise almost without exception within its boundaries. All the water is pure and free from alkaline matter. The only marketable timber is found in the north and northeastern portion of the township, but is not of a very good grade. The remainder of the township is covered by small poplar and very dense willows and scrub. There are a few hay sloughs but not of any considerable value. The climate is similar to that found in other portions of Central Alberta. There is no available water power, building stone, outcropping of coal or any minerals of economic value. A few jumping deer is the only game in the vicinity. There is a small stretch of prairie in section 1 following the valley of Red Deer river.—*A. E. Farncomb, D.L.S., 1904.*

Township 51.—Of this township I surveyed the part east of the meridian going south from the northeast corner of section 34. The principal feature is Low-water lake, situated in the eastern part and extending north and south mostly through the whole depth of the township, fifty chains only, of the west boundary of section 31 being out of water. The eastern part is reached by a wagon trail coming from Mewassin. The northwestern part can actually be reached only by a trail coming from the Indian reserve, situated east of Wabamun lake, two miles north of this township. This trail leaves the Indian reserve on the south boundary of section 14 to enter the subdivided part of 52—4 on section 11, crossing this last township in a southeasterly direction it comes into 51—4 on section 32. From this last trail, there is an old Indian pack trail going south towards the Saskatchewan through sections 32, 29, 20, 17, 8 and 5. It is so lightly marked that it escaped our attention in winter; this is the reason why it is entered in the notes only approximately north of section 8. The soil is a coat of six inches of black loam over a clay subsoil. However towards the south, for the depth of two sections, the soil is mostly sandy loam. The whole of the township is suitable for farming. The country is slightly hilly toward the north, but for the remainder it may be taken as heavy rolling with good patches of level ground. The three northern miles may be considered as thickly wooded, for that part of the country, but from there south, many patches of prairie and small poplar or scrub offer good chances for prompt settlement. The timber is mostly poplar, but there is some good spruce along the north boundary and also a good amount of it along the eastern boundary of sections 6 and 7. The water is good in lakes, sloughs and creeks, but as in all that section of country it may be scarce in dry years. There are no water powers. Poplar is the fuel mostly available. It can be procured all over the township, but it is more abundant towards

the north. I have heard that along the Saskatchewan, not far south, coal is available. I know of no stone quarries nor of any minerals. Game is not plentiful. There must have been an immense quantity of beavers in this country once, if we judge by the number of beaver dams found along the creeks in the township.—*Geo. P. Roy, D.L.S., 1904.*

Township 51.—There is a wagon trail from Mewassin to Fraser's sawmill in section 36 in good condition, from that place to Saskatchewan river, the road goes nearly south. The north part of the township for two miles is thickly wooded with spruce of fair size, poplar and cottonwood, but the best spruce has been cut. So, it was a hard job to run and measure the lines over that rough country covered with windfall. Every care has been taken in consequence to obtain accurate measurement. I was obliged to open a pack trail in bush all around this township. The surface is roughly rolling and in some places broken by several creeks with banks 150 feet high. These creeks seem to run all the season, but I think when the timber will be cut they will be dry the greater part of the summer. Settlers coming to this township in view of farming will have hard work to locate themselves in a suitable section on account of thick willow and brush, but they will not regret their trouble if they intend to keep stock. There is enough hay for the needs of settlers who will find, at the same time, good land with black loam and clay subsoil. So, in conclusion I may state that in my opinion this township is better suited for stock raising than for farming purposes.—*C. E. Bourgault, D.L.S., 1904.*

Township 52.—Wabamun lake and an Indian reserve, situated north of sections 10, 11 and 12, bound on the north the sub-divided part of this township. This township can be reached only by a trail passing through the Indian reserve from Mewassin, that is, first running northwest from Mewassin till it nearly reaches the 14th base line, and from there going southwest till it strikes the subdivided part of this township on section 11. It runs from there nearly southwest until it leaves the township on section 5. The soil is black loam in most places. The surface is slightly hilly all through, the elevations being covered with poplar of a fair size with spruce in the muskegs. The line between sections 9 and 10 passes through a fine grove of spruce averaging eight to ten inches in diameter. The only place where hay can be found to any extent is along Wabamun lake, especially in the part bordering on sections 9 and 16. Whitefish are plentiful in the lake. The water is good in the lake, and in the creeks, which are of little account, and consequently there are no water powers. Wood as fuel will be abundant for a while, moreover coal exists on the next range along Wabamun lake on the north side. There are no stone quarries nor minerals, and very little game.—*Geo. P. Roy, D.L.S., 1904.*

Township 52.—There is a trail from the reserve around the lake crossing the township, but it is in a very bad condition. I could not use it. I was obliged to carry my outfit with pack saddles, and I cut my trail in bush, which was a cause of delay. On the south part the first two miles is rolling and in some places hilly, sloping to the lake and covered with poplar, spruce and birch. I noticed especially the southeast corner, which is thickly wooded with spruce. Messrs. Fraser & Co. were cutting logs during the winter. The soil is either clay loam or sandy loam, containing very good land for agricultural purposes, and can produce all kinds of cereal and root crops. The only objection to this township for settlers is the labour involved in clearing a forest country. The climate is very fine; this is due to the warmth of the water of the lake, which tempers the atmosphere for a distance of a couple of miles around the lake. This township is well watered with Wabamun lake and several creeks of good water running to the lake. Wabamun lake is a large sheet of water, measuring twelve miles long and two miles broad. It empties its water through Wabamun creek into Saskatchewan river. It abounds in fish of different kinds such as whitefish, pike, carp, &c. To give me an idea of the value of the fishing, a merchant told me that during

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the winter he had exported to United States 375,000 pounds, besides all other exportations made by other persons. Several half breeds of Lake St. Ann settlement spend the greater part of the season fishing in that lake. If we add to that number about 500 fish that are caught daily for the consumption of the reserve and settlement, we will form an idea of the great destruction of fish that is going on at Wabamun lake. Care should be taken to allow fishing only at the proper season. There are no water powers, minerals or game. Notwithstanding some objections for the settlement of this fractional township, on account of bad roads and heavy bush, I will not be surprised to see all quarter sections taken around the lake for the fine site and the advantage of being near a lake full of fish.—*C. E. Bourgault, D.L.S., 1904.*

Township 55.—The public road reaches the east end of lake St. Ann. In summer, wagons follow along the marshy ground in the lake on the north shore, for a couple of miles to a wagon road that goes to section 6, after going through Alexis Indian reserve. Section 36 is reached by a wagon road going northerly from the Indian reserve. The soil is good for farming. The pits show, except of course in muskegs, a sandy clay subsoil, covered by a few inches of black loam. Stones are apt to be found in the ground on the ridges. The surface is rolling throughout the township, but no high ridges or steep hills were found. Fire has raged over the township, and the only timbered parts which have fair sized poplar are a strip a couple of miles wide on the eastern part of the township; and along the north boundary of the reserve, and that part of the township lying west of the reserve. In this latter part the timber is only in patches. The rest of the township is covered with a new growth of timber. Dry wood standing and fallen is found throughout the township. With the exception of a very few spruce and tamarac big enough for logs, and a few bunches of the same timber, but of smaller size, the timber found is poplar of good size in the places above described. The rest of the timber is small poplar and scrub. Marsh hay is found in the muskegs. There is some hay growing in the open spaces, but it is poor. The water found in the little lakes of the township is not fit to drink. The only creek of any consequence is in section 6. It was almost dry at the end of August. There is no water power. The climate seems to be somewhat warmer than that of Edmonton. A few balsam trees and jackpine are found, and wild gooseberries and red currants. The most readily available fuel is the dry wood scattered throughout the township. No minerals were found and no rock in place. Ducks are plentiful in the lakes. Partridges are seen occasionally.—*Raoul Rinfret, D.L.S., 1904.*

Township 60.—(North outline).—In range 4 the surface is broken and heavily timbered with spruce and poplar. Shoal lake with the hay marsh surrounding it covers part of sections 35 and 36. On the northwest quarter of section 35 the line intersects the Canadian Northern railway exploration line and on section 34 crosses Chalmers trail. Soil is 3rd class.—*L. E. Fontaine, D.L.S., 1904.*

Township 72.—(North outline).—Lesser Slave river crosses the 19th base line near the middle of section 35. For a distance of between one-half and one mile on each side of this river we find good land, but being rather low, it will be better suited for grazing than for any other purpose. The remainder of the range is mostly a mossy swamp of small tamarac and spruce and is of no value until drained.—*Edgar Bray, D.L.S., 1904.*

Range 5.

Township 28.—This township may be entered from the south, at the southeast corner of section 3, by a timber trail, leading in from the east. Again it may be entered from the northeast corner of section 24, and there is a fair wagon trail along the hill north of Dogpound creek, to the middle of section 22. The soil of the part of the township surveyed by me is chiefly gravel. It is generally stony. The surface is broken and the subsoil is stony—loose stones and gravel. There is good grass along

Dogpound valley, where the scrub and trees are not too dense. There is good hay cut on the west side of the township, in the centre of section 18. There is a deserted house on the northeast quarter of section 18. There is also a deserted timber camp in the northwest corner of section 9. There is some merchantable timber in Green valley in the northeast corner of 22 and northwest corner of 23, mostly spruce and pine from six to eighteen inches in diameter. There is also some good timber in section 6, but this section is very rough, so it would be difficult to get timber out. South of the Dogpound the timber has been burnt. There is much fallen timber and windfalls, and the timber is chiefly second growth pine and poplar from two to six inches in diameter, except the merchantable timber, previously referred to. North of Dogpound creek and east of the muskeg in 28 and 33, there is less fallen timber. The part of the township surveyed by me is suitable for grazing purposes. There is plenty of good fresh water. There are no water powers. The climate is healthy. The days are warm and the nights are cool. There were slight frosts in August, but they did no damage. There is no coal, but plenty of wood for fuel. No stone quarries were located. There is good trout in Dogpound creek and partridge are plentiful. No mineral specimens were found. The surface is generally broken and the streams flow in deep coulées. This combined with some large hills on the west gives the country a rough appearance.—*John Ayles, D.L.S., 1904.*

Township 29.—The route to this township is by way of Bradbourne post office, which may be reached from the south or from the east or from the southeast. From Bradbourne, the route is about west to the southeast corner of the township, from which point, a wagon can be taken northwest as far as the eastern boundary of section 15; or it can be taken into section 11 and thence along the right bank of Stony creek, to a point near its confluence with Little Red Deer river, and by crossing the creek, a point can be reached on the northern boundary of the township, two miles west of the northeast corner. There is also a road from the northeast, leading from a saw-mill on Little Red Deer to a lumber camp on the same river, by which a point in section 29, on the bank of Little Red Deer can be reached. The soil of nearly all the township is good, being a black vegetable mould over clay or loamy clay and is classified as No. 1, but along the westerly part of the base line, and along the westerly limit of the township as far north as Little Red Deer river, the hills are for the most part of cemented gravel or of loose rock. The township is well fitted for grazing. Where the woods are not so dense as to obscure the light, there is good grass amongst the trees and scrub. The streams flow in deep valleys, forming in some places ravines, and the effect is a rather rough surface. To the west of the township, the surface is hilly and broken and too rough for agricultural purposes. There is a great deal of timber in this township especially of large poplar and spruce, and a great quantity of poles suitable for fencing. These poles in places grow so densely that it is difficult to get a line through them, there being no place to let them fall, after they have been cut. The merchantable timber and poles are chiefly to the west of the meridian, forming the east boundary of section 3 produced across the township, and to the south of Little Red Deer river. Along the right bank of the river in sections 35 and 36, there is also a dense growth of large spruce. The poles previously referred to are chiefly from 2½-inch to 6-inch in diameter and from 25 to 50 feet long. Poplar and spruce up to 10 inches in diameter are plentiful and poplar of 18 inches and spruce of 30 inches in diameter are found. The balance of the township is covered with scrub and grass and small poplar, and a few clumps of spruce. There is very little hay. On the east side of the township, there are a few patches of hay of an acre or less. Very little of the prairie grass is available as hay, because of the great quantity of scrub. The chief streams are Little Red Deer river and stony creek, in both of which the flow is permanent and the water fresh and good. There is no indication that either of these overflows its banks to a troublesome extent. The Little Red Deer is suitable

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for driving logs. It is made up of pools and rapids. Last spring, logs from section 29 were floated down the river to a sawmill further down. There are no water powers. The climate is agreeable and temperate. There were no summer frosts to cause damage during the present season. There is an abundance of wood for fuel. Wood is hauled during the winter season from this township to the villages along the Calgary & Edmonton railway and to ranches at intervening points. There is a coal mine on section 17, which was worked last winter and a considerable quantity of coal taken from it. No stone quarries were observed. No minerals were observed except the coal mentioned. A few deer were seen and a considerable number of partridge and prairie chicken. Trout are plentiful in Stony creek and in Little Red Deer river.—*John Aylen, D.L.S., 1904.*

Township 30.—This township may be entered from the northeast by a wagon trail, that leads to the Little Red Deer river, and is on the north bank of the river in section 4. The soil of most of the township is black vegetable soil over clay. In the valley of Fallentimber creek the subsoil is gravel. The township is suitable for grazing and where the growth of timber is not so dense as to shut out the light, there is good grass amidst the brush and trees. East of the eastern boundary of section 3 produced, the surface is covered with scrub, small poplar and some spruce, also good grass. This is the most lightly timbered part of the township. To the west of this line the surface is densely covered with poplar and spruce, ranging from two to fifteen inches in diameter but chiefly from four to ten inches. There are a few scattered patches of small pine and a few less densely wooded spots along the valley of Fallentimber creek. There is also a muskeg of considerable area, extending from the southern boundary of section 15, in a direction a little east of north and extending beyond the north boundary of the township. There are two small lakes along the north boundary of section 20, the water of which is of the character of slough water. There is some hay along the east side of section 36. There are large springs on section 16, that feed a creek, that discharges into Little Red Deer river. This creek seems to have a permanent flow. The water of all the streams is fresh and wholesome. There are no indications of floods to cause damage. There are no water powers. The climate is agreeable. While the sun is up the air is warm and it cools off rapidly as the sun sets. No coal nor lignite was observed in the township, but there is an abundance of wood suitable for fuel, for building, and fence purposes and for making pulp. No building stone was observed, as the surface is well covered with soil. No minerals were observed. There are a great many partridge. Black bears are also numerous. There are splendid trout in Fallentimber creek and in Little Red Deer river. A few deer were also seen. A word might be said regarding sections suitable for timber berths. In the following quarter sections there is some good spruce and poplar.—In section 8, also in N.E. and S.E. quarter sections of 21; N.E. and S.E. quarter sections of 22; S.W. quarter section of 26; S.E. and N.E. quarter sections of 27; S.E. quarter section of 7.—*John Aylen, D.L.S., 1904.*

Township 31.—This township lies about 18 miles due west of Didsbury, a small town on the Calgary and Edmonton railway. The roads are fairly good up to the northeast corner of this township or could be made so with slight expenditure of time and money. It is easiest of access by way of Mr. Robert Brown's ford of the Little Red Deer on section 17, township 31, range 4, thence by a trail along McDougall coulee, which crosses the northeast quarter of section 36 of this township. This is about the only way, at the present time, of getting into this township, it would be necessary to make some slight improvements for crossing the creek in the bottom of this coulee. The soil varies from a light sand to a stiff clay, overlaid generally by a depth of black loam varying in thickness from 2 to 12 inches. It would grow any kind of crop, if the climatic conditions were favourable. This is virtually a bush township, the first one coming in from the east, the timber consisting of poplar, banksian pine and spruce, but not in sufficient quantities to be of any commercial value. The best timber has al-

ready been removed, there being a sawmill only four miles distant. Settlers from the prairies to the east come in here in the winter, camp here, cut their logs and haul them to the sawmill, from where after being sawed, they haul the lumber to their homesteads. There are numerous marshes and meadows distributed over the township, some of which are of the nature of quaking bogs and retain the frost until late into the season. Water is good and plentiful, and I think, permanent. A large stream, Fallentimber river, divides the township into east and west halves, and appears at certain seasons to reach extraordinary dimensions, to judge by the scattered driftwood and other debris caught on standing trees, in some instances 10 or even 15 chains away from the main bed. These flats or bottoms are mostly stony, having been denuded of the soil by frequent overflowings. There are no falls but the current in the river is very rapid. At the time of survey (May) almost nightly frosts were experienced. The timber being of no particular value, except for local domestic supply, if once removed this township would well adapted for cattle raising. Fuel is plentiful, such as poplar, banksian pine and spruce, but no coal of any description was found, neither was any stone found suitable for quarrying, nor any other minerals. Signs of game, such as deer, partridge and a few grouse were occasionally seen, but the animals that make themselves most conspicuous were the bears, both black and brown, as they on several occasions made serious inroads into provisions that had been cached by me in various places. Speckled trout and greyling were also taken out of Fallentimber river, although not in such numbers as in the townships higher up the stream.—*C. F. Miles, D.L.S., 1904.*

Township 31 (north boundary).—This boundary was surveyed to complete the survey of township 32, range 5, west of the fifth meridian. The country traversed by this line is generally hilly, well timbered with poplar, jackpine and spruce of various sizes, but with a few small patches of prairie. Fallentimber river, about 1 chain in width, is crossed, and although it has a swift current there is no place available for the development of power to any extent. No minerals were found on this line.—*H. B. Proudfoot, D.L.S., 1904.*

Township 32.—A trail running due west from Olds station on the Calgary & Edmonton railway to the mill in this township affords an easy method of reaching it. This is a good winter road, but in what shape it would be in the summer I cannot say. The soil is generally black loam of varying depths over a clay subsoil. The flats on the north side of Red Deer river have a very light deposit of alluvial soil over gravel subsoil. On account of the frequent summer frosts this country is not adapted for grain growing. Of course, that drawback may disappear with the advancement of settlement and the consequent clearing of the land. North of the Red Deer the land is mostly prairie with a fringe of spruce and poplar near the water. South and east of the river the land is heavily timbered with spruce, poplar and balsam of Gilead. There is no hay except around the few sloughs and amongst the brush in the scrub land. Red Deer river and Fallentimber river are the two principal streams. There are also numerous small streams or brooks, but at time of survey most of them were frozen to the bottom. There is no water power. The weather was very cold in February, but in March the snow had disappeared. Frost was in the ground though until after the middle of June. For fuel there is timber only. Outcroppings of coal were noticed in 32-6, but none in this township. There are a few exposures of bed rock along Red Deer river, but none of them had been developed. No minerals were noticed. Chickens and partridges and a few deer and bear were seen.—*H. B. Proudfoot, D.L.S., 1904.*

Township 33.—A trail running due west from Olds on the Calgary and Edmonton railway strikes Red Deer river about one mile south of the south boundary. There is also a branch of that trail running northwesterly to Niddrie's ranch on section 36. The soil is generally a small alluvial deposit of black loam over a poor clay subsoil. The land in the northwesterly portion is of better quality. On account of the pre-

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valence of summer frosts this country is at present unsuited for grain growing. Along the south boundary there is considerable prairie on the flats of Red Deer river. The northwesterly part is well timbered with jackpine, spruce and poplar, where not burned, and there is some good spruce along the Red Deer. The remainder of the township is covered with a small growth of poplar, spruce, jackpine and balm of Gilead. There are no hay marshes of any extent. By the cleaning of the scrub on the uplands good hay can be cut. There are numerous spring creeks, no lakes and but few sloughs. Red Deer river and Bearberry creek flow through the township. All the water is fresh. There is no water power. It was exceedingly cold at the time of survey—25° and 30° was a common occurrence. I am informed that there is frost every month in this locality. Timber is the only available fuel. Stone quarries may be opened up in some of the cut banks of the Red Deer near the northerly end of the township, but at present none are being developed. No minerals were observed. Blacktail deer, bears and chickens are found. McDougal's ranch is located in the south, Niddrie's and Fletcher's ranches in the northeast, all have a large number of cattle and good buildings.—*H. B. Proudfoot, D.L.S., 1904.*

Township 34.—An old trail from Red Deer station on the Calgary and Edmonton railway passes close to the north boundary of this township. The soil is generally a black loam of varying depths over a clay subsoil. On account of the shortness of the season and the frequency of summer frosts, the country is only adapted for ranching or cattle raising. The greater portion of the area is covered with a small growth (large in some places) of poplar, balm of Gilead and spruce. Wherever the land is at all open there is a thick growth of scrub. Very little real prairie exists. There is good pasture all over for cattle and horses—even in the timber but there are no hay marshes of any extent. The water is very good—the numerous spring creeks and the sloughs are all sweet; very little alkali is met with. Power might be developed on the Red Deer by the construction of dams but it would be liable to flood a large area in township 33, range 5. The survey was made in winter and some pretty cold weather was experienced. The mounders who were working in this township in June had some trouble with frost still in the ground in places. I have been informed that summer frosts are very prevalent. Poor quality of stone is exposed in the cut banks of the Red Deer, but it has never been worked. No minerals were noticed. Tracks of moose and red deer were observed; partridges and prairie chickens were numerous and tracks of bear were seen in June.—*H. B. Proudfoot, D.L.S., 1904.*

Township 36.—In order to reach the above township I found the nearest accessible point to be Markerville, P.O., on Medicine river, from there proceeding west to Rocky Mountain House. Olds trail, by a road which is good in winter, but I understand is impassable in summer, thence following the above trail about five miles to near the forks of Raven river, then by following an old trail across the north branch of Raven river and north of Raven river through the township above referred to. The route adopted in summer crosses Medicine river at Markerville, P.O., then south along the right bank of Medicine river to Red Deer river then following this river to Rocky Mountain House trail. The soil generally in this township is a sandy loam with a clay subsoil being on the whole class No. 1 and as it is not heavily timbered would be easy to break and put into cultivation. Although it is of the lightest variety of soil, still this is better adapted for the short seasons and early frosts which prevail at present. The whole of this locality is well adapted to mixed farming as it is well watered by springs and Raven river. All the water is exceptionally pure and free from alkali. There is very little marketable timber in this township; what little there is, is chiefly in the valley of Raven river in the southern portion of the township, being principally spruce, tamarac and jackpine varying from four to thirty inches in diameter, but as it is only found in bluffs it is hardly worthy of special mention. The greater portion of the country is rolling and covered with small poplar and scrub, with patches of

small jackpine. There are no hay sloughs of any value but a considerable quantity might be found in the valley of Raven river. The climate is similar to that found in other parts of central Alberta. There is no available water power, building stone, outcropping of coal or any minerals of economic value. The only game to be found in this township is the jumping deer.—*A. E. Farncomb, D.L.S., 1904.*

Township 37.—In reaching the above township I was forced to use the trail already opened through the timber from Evart's post office to township 38, range 5, and from there to the several camps in this township. The best way to reach the southern portion in the summer or perhaps any part of the township would be from Markerville post office on Medicine river west to the trail from Rocky Mountain House to Olds, which passes diagonally across the southern portion of this township. The soil on the whole is fair, being a sandy loam and in most cases a clay subsoil, being suitable for dairying and mixed farming. This township is well watered by lakes and ponds and also by the north branch of Raven river, which flows through its southern portion. The hay meadows are not good at present, but with drainage very valuable meadows could be obtained. In the valley of the north branch of Raven river, however, a considerable supply of hay could be cut under present conditions. The water throughout the township is pure and free from alkali, especially the north branch of Raven river, which rises in a large spring near the western boundary of the township and is free from ice for at least two miles in the severest winter. Owing to its small drainage area this stream could not flood to any extent. There is no available water power, no outcrop of coal, building stone or minerals of an economic value. The climate is similar to that in other portions of central Alberta. The only timber of any value is found in sections 2, 3, 27 and 33 varying from 6 to 30 inches in diameter, the remainder of the township being covered with small poplar and scrub. There is no prairie in the township. There did not appear to be game of any description.—*A. E. Farncomb, D.L.S., 1904.*

Township 38.—I found it impossible to reach the above township by any well travelled trail, but that by following a winter road which had been cut through the timber from Evarts P.O. on Medicine river to section 2, township 38, range 4, and by continuing this road west, I was enabled to get a very good winter road to my first camp and from the first to the other camps by following the sloughs and cutting new roads. This road, which I have opened, will be impassable in summer, and in fact considerable difficulty will be experienced in opening up the road allowances for the settlers in the future throughout the whole township, unless by means of a systematic drainage scheme. I found the soil on the higher lands, that is the portion which was not covered by sloughs to be a light covering of sandy loam with a clay subsoil and well adapted for dairy and mixed farming. The surface of the ground is on the whole gently rolling and not abrupt, about seventy-five per cent being covered with small poplar and scrub and the balance sloughs and patches of marketable spruce and tamarac varying from six to thirty inches in diameter. There is no prairie in this township. About fifteen per cent of the township is covered by sloughs and ponds, and if drained would make very valuable hay meadows, but at present there is very little hay of any value. There is only one creek of any importance in this township, being a branch of Horseguard creek, and is fed by the innumerable sloughs in this township and adjoining ones; but in dry seasons I am of the opinion that it would dry up. There is no available water power, outcropping of coal or any mineral of economic value, nor does there appear to be any building stone in the vicinity. Game of any kind is very scarce. A few jumping deer are to be found in the northwestern portion of the township.—*A. E. Farncomb, D.L.S., 1904.*

Township 41.—This township is reached by way of the Rocky Mountain House trail from Lacombe. The trail is for the most part in fairly good condition, and passes about six miles south of the township. The soil is mostly clay and should,

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when cleared of timber, be suitable for grazing purposes. There is very little open prairie and the surface is more or less hilly throughout. The timber is mostly poplar which is mixed with spruce, in the northwest part of the township. There was formerly a heavy growth of pine and spruce in the south part of the township, all of which was destroyed by fire many years ago, and the resultant *brulé* has been overgrown to a considerable extent with poplar and scrub. There is very little hay. There are numerous springs, and small creeks of fresh water, the largest stream being a branch of Medicine river, which crosses the northeast corner of the township. It is there about 20 links in average width with moderate current and low banks. Depth about 18 inches. There are no water powers. So far as it was possible to obtain information as to climatic conditions it would appear that the winters are much milder than in places further east and the rain and snow fall not usually heavy. Summer frosts prevail to a considerable extent. There is an ample supply of wood suitable for fuel. No indications of coal were observed. There is no stone suitable for building purposes and no minerals were noticed. Bears, deer, prairie chicken and partridge are found here.—*Geo. Edwards, D.L.S., 1904.*

Township 51.—Bounded on the east side for the most part by Low-water lake, this township was reached by the squatters, who settled in it last summer, through a road which they opened themselves for a distance of eight miles, that is from the end of the trail leading from Edmonton to the banks of Saskatchewan river after passing through Mewassin. This new road enters the township near the point where the southeast corner of section 4 will be established. We came into the township by an old pack trail which crosses it in a southwesterly direction from the east boundary of section 36; leading to the Rocky mountains from the Indian reserve adjoining the east shore of Wabamun lake in range 4. The soil with a few exceptions is a coat of black loam three to six inches deep with a clay subsoil, but there are a number of spruce swamps which reduce considerably the farming area of the sections. The ground is hilly in the northeastern sections with the middle part of the township heavy rolling, while the southwestern sections are comparatively easy rolling. The north part is thickly wooded with poplar and some spruce. The bush gets lighter in the middle part, and in the southern part the country is more open, that is, it will be easily cleared. There are few hay sloughs of any extent. The water was good where found. There are no water powers in this township. The climate is the same as in the vicinity of Edmonton, but the snow is slightly deeper in winter. I have seen no coal, but for a few years plenty of fuel will be found in the woods of the country. I have been told that coal exists along the banks of the Saskatchewan south of this locality, and on the north shore of Wabamun lake in this range, that is in township 53, range 4. I have met no stone quarries nor minerals of any kind. We crossed tracks of bear, deer and moose and we saw plenty of duck, chicken and some partridge.—*Geo. P. Roy, D.L.S., 1904.*

Township 52.—The surface of this township is rolling and in some places broken and hilly, especially along the creeks. It is thickly wooded with every kind of timber; in the first three miles on the north side there is green and dry poplar, cottonwood, willow, brush, some jackpine of fair size and scattered spruce along the ridges of the creeks; while the south part, especially in the southwest corner, I found spruce and tamarac in muskeg. The latter are of good size for ties and frame bridges for railway work. The north half, adjoining Wabamun lake and the east half of the township is very good land for agricultural purposes. The soil is either clay loam or sandy loam, and will produce all kinds of cereal and root crops. The only apparent objection for settlers is the labour involved in clearing the forest country. Regarding climate, I may state my own experience. Very cold weather was recorded in the beginning of February, the coldest day registered was the 14th of that month (-57°). All the month of February was cold, but not to prevent the work on the line, and, living in the

canvas tents was not uncomfortable, except on the above mentioned date. In the month of March we had 3 feet of snow, which delayed the work, but in April the fine weather commenced which lasted till the end of the season. The few settlers and Indians on the reserve said that they have no frost in the summer; this is due to the warmth of the waters of Wabamun, which tempers the atmosphere for a distance of a couple of miles around its shore. This township is well watered by small lakes and several creeks of good and clear water which run all the season, even in a dry summer, because they have their source in a spruce muskeg, and also in Wabamun lake, which is situated on the north part. This lake is a large sheet of water 12 miles long and 2 miles broad, and empties through Wabamun creek into the Saskatchewan. It abounds in fish of different kinds such as whitefish, pike and carp. To give an idea of the value of the fishing a merchant told me that during the winter he exported 3,000,000 pounds, besides the exportations made by some other merchants of Edmonton. The half-breeds of St. Ann spend the greatest part of the winter fishing in that lake. I found, in traversing the lake, on the N.W. $\frac{1}{4}$ of section 35, coal which was very useful for fuel during the cold days in the winter. In conclusion I may state that this township is a safe farming land, settlers will not be disappointed.—*C. E. Bourgault, D.L.S. 1904.*

Township 53.—This country is reached by a branch of the road going from Mewassin to Lake St. Ann, which branch forks on section 7, township 53, range 3 and going across range 4 it dwindles to a pack trail, ending near the east boundary of this township. This is the shortest road to get into that section by land. The northwest corner of the township strikes in Isle Lake while the southeast angle falls in Lake Wabamun, which runs towards the west, close to the eastern limit of range 6, covering part of sections 6 and 7. In fact the most western waters of this lake come to within 10 chains of the corner post of section 1, township 53, range 6. The land parts of sections 4 and 5, and part of 6 are separated from the northern sections by the lake, which there measures as much as two miles and a half across. Whitefish are plentiful in the lake, and the fishing is part of the revenue of the surrounding country. Many sections have been classed as No. 3 in the field notes, but these remarks apply more to the broken nature of the surface than to the soil, which is mostly a good coat of black loam over a clay subsoil well adapted to farming. The surface is hilly, especially in the proximity of the lake; this section is in fact the roughest that I have traveled through this summer, and no Indian trail goes across it. It is a timbered country. Good poplar with some spruce 10 to 14 inches diameter are seen on every section. Large spruce 10 to 30 inches in diameter are found on sections 31 and 32 as well as on sections 14, 15, 20, 23, 24, 25, 26 and 27. Along the east and north boundaries, although there are some scattered spruce and jackpine, small poplar and windfalls predominate, showing the passage of fire at a date not far back. It is remarkable that there is birch nearly all through the township. Hay does not appear to be plentiful and hay sloughs seem to be scarce. Water is good wherever found. There are no streams capable of producing water power. The climate is the same as in the vicinity of Edmonton. Wood as fuel is abundant, but good coal is found on section 10, close to the shore. The seam has already been worked. Although stones are met in some places, no quarries were found in the township, nor any minerals. Game outside of duck and chicken is scarce. Although bear and many other kinds of fur bearing animals are seen once in a while, this is not to my judgment a rich country for game.—*Geo. P. Roy, D.L.S., 1904.*

Township 54.—Island lake is the principal topographical feature of this township. It extends four and a half miles in a northerly direction, from the southwest corner, to its outlet, Sturgeon river, on the east boundary of section 10. Running northeast as already said, it measured about nine miles in length by a mile and a quarter in breadth, covering part of this township and part of township 53, range 6.

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I have been told that its depth averages thirty feet. Whitefish are found in it. The trail from Edmonton to Jasper crosses this township in a southwesterly direction from the east boundary of section 24, to the west boundary of section 6. It is narrow and crooked with many soft spots, but wagons can travel over it as far as Gray's store, in township 53, range 6, beyond which place it is nothing but a pack trail, although vehicles can go a few miles further. On section 14 a pack trail branches from it running about due west to Pembina river where it comes back again to the main trail. It is used only in very dry seasons, on account of the many muskegs through which it goes, and although it would shorten the distance by more than eight miles, travellers to Jasper prefer the road around by Gray's which is in a far better condition. Like all the rest of this section of country, the soil is a coat of black loam six to ten inches deep over a clay subsoil, capable of producing good crops when cleared. The surface is heavy rolling covered with green poplar in the south part, and small poplar, windfalls and scrub towards the north. There are large patches of prairie covered with small scrub especially towards the northeast corner, in fact a good fire would pretty nearly make an open prairie of this part of the country. There is some good poplar and some spruce, enough for building purposes for settlers, but if used for fuel the woods would not last long after the country is settled. However, coal will be easily procured in this section of the country, either from Pembina river or from the township north of this one; if not found here itself. There are no hay sloughs of any consequence in the township. Water is good in the lake and wherever found elsewhere. There are no water powers. The climate is the same as in Edmonton with a little more snow in winter. I have seen no stone quarries nor minerals, and game is not plentiful.—*Geo. P. Roy, D.L.S., 1904.*

Township 56 (north outline).—In this range the base line passes over a gently rolling country comprising clumps of poplar of an average of six inches diameter alternating with small open patches mostly covered with willow scrub. Soil is rated third class.—*L. E. Fontaine, D.L.S., 1904.*

Township 60 (north outline).—In this range the country is rolling and in the depressions are to be found muskegs and tamarac swamps. It is thickly wooded with poplar and spruce suitable for lumbering. Throughout the range the soil is of poor quality and rated third class.—*L. E. Fontaine, D.L.S., 1904.*

Township 72 (north outline).—Lesser Slave river crosses the 19th base line four times in this range, viz., twice in section 35, once in section 34 and once in section 33. A belt of variable width up to one mile along this river is good land, and should be suitable for grazing purposes though it is generally very scrubby. All of section 31 and a part of section 32 is scrubby prairie with an excellent soil. Elsewhere the land is mostly swamp.—*Edgar Bray, D.L.S., 1904.*

Range 6.

Township 27.—This township may be reached from township 28, range 6, with wagons by following the valley of Dogpound creek to a point on the north boundary of section 35, township 27, range 6. But the route is bad because of the dense brush and soft ground. There is no southerly route from this point into the township. It may also be reached from township 26, range 5, which is the location of the Mount Royal ranch, through the open country, along the correction line to Ghost river, thence northerly along the pack trail leading from Morley to the north boundary of section 31. This trail in the vicinity of the lake in section 30, is very bad, because of the softness of the ground. The soil in the hills is rocky and stony, the bed rock coming to the surface at the summits and being near the surface along the slopes. In the valleys the ground for the most part requires to be drained. Along the southerly limit of section 1 to Mount Royal ranch, people have grown oats. On the northerly

part of sections 3 and 4, Mr. A. McDonald has grown oats, potatoes, turnips and carrots for a number of years. The roots are of good quality. He has also cultivated a piece of grain, along the northerly limit of sections 17 and 18 for a number of years and has grown here good roots. The township is fitted for grazing purposes and on part of it there is some good timber, spruce and pine to fifteen inches in diameter and fir to four feet. The chief part of the timber of commercial value is on the north half of sections 9, 10 and 11, and the south half of 14, 15 and 16, and on sections 12 and 13. The balance of the township is chiefly covered with scrub and second growth timber and grass. The surface is rough. Ranges of parallel hills run southwesterly from the northerly limit of the township, nearly to the southerly limit. These ranges are cut transversely at many places by ravines. Ghost river runs in a very deep ravine. There is little hay in the township. Mr. A. McDonald has cut hay on the northerly part of sections 17 and 18, near the northeast corner of section 18. The chief streams are Dogpound creek in the northerly part of the township and Ghost river in the southerly part. Ghost river is in December about seventy links wide and about two and one-half feet deep with a strong current. At the stage of high water it overflows its banks to a width of about three and one-half chains. The water is clear, cold and wholesome. Dogpound creek has its source in section 22. It is but a small stream from five to six feet wide and from eight inches to one foot deep at low water stage, where it leaves the township; but the flow seems to be permanent. There are no water powers. The climate is about the same as at Calgary. There is abundance of wood for fuel. No stone quarries were seen. No minerals were seen. The chief game are deer, partridge and prairie chicken.—*John Aylen, D.L.S., 1904.*

Township 28.—This township is reached with wagons from township 28, range 5, by following the valley of Dogpound creek to the point where it crosses the north boundary of section 1, township 28, range 6, thence northwesterly along a road cut out by myself to Little Red Deer river, which it reached about one-half mile west of the east boundary of section 28, township 28, range 6, thence up the valley of Little Red Deer river along a road cut out by myself to a point near the quarter section post on the north boundary of section 19, township 28, range 6, where the pack trail, leading northerly from Morley, crosses Little Red Deer river, thence southerly along this pack trail over a very bad road, that would seem to be passable for wagons only when the ground is frozen, as it was when I passed over this trail to Ghost river and Mount Royal ranch, which is on section 3, township 26, range 5. This township is very rough; ranges of hills, nearly parallel, in lines about one-half mile apart run southwesterly through it. These ranges are cut transversely by deep gorges, in which flow the streams. The hills reach to a height of 1,200 feet. At the summits and along the sides, the bed rock is at or near the surface. In the valleys the soil is good, but needs to be drained. The township is suitable for grazing purposes. The surface is covered with scrub, second growth jackpine and poplar, and where the trees do not grow too thickly there is good grass. Sections 4 and 5 are chiefly covered with wind-falls. The township has been burnt and the large timber destroyed. Except on sections 25 and 36, there is no timber worth mentioning. On 25 and 26, there is considerable jackpine up to ten inches in diameter. On sections 30 and 29, on the low land, along Little Red Deer river, hay suitable for cattle has been cut. The Little Red Deer and Dogpound creek have a permanent flow of good water. The water of the other streams is of good quality. There are no water powers. The climate is about the same as at Calgary. There is an abundance of wood for fuel. No coal or lignite was seen. The rock is shaly. No stone suitable for building was seen. No minerals were observed. Partridge and prairie chicken are the chief game, and splendid trout are plentiful.—*John Aylen, D.L.S., 1904.*

Township 29.—This township may be reached by a pack trail leading from Ghost river, northerly along the west side of township 28, or by a better road, cut out and

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made by myself, along the easterly side of township 28 from Dogpound creek to Little Red Deer river, thence up Little Red Deer river by a road made by myself to the point where the aforesaid pack trail crosses this river, which is in section 29, township 28, thence northeasterly to the centre of township 29, by a road made by myself. This route is passable for wagons throughout the season. The pack trail is only passable for wagons when the muskegs are frozen. The surface is rough and hilly—the ranges of hills having a general northwesterly trend and being cut transversely by streams. The soil in the valleys is good, but most of the valleys are swampy and would need to be drained to fit them for agriculture. That on the hills is stony and on most of the hills the ledge rock comes to the surface. The township is only fitted for grazing purposes. For the most part the township is covered with second growth jackpine and poplar and a small quantity of spruce. Where the valleys are too wet for the growth of such timber, they are covered with scrub and grass. Little of the timber exceeds ten inches in diameter. Forest fires have destroyed the old timber and most of the young timber is from four to eight inches in diameter. It seems to take a jackpine tree in this vicinity from twenty-five to thirty years to attain a diameter of six inches. These trees, in places, are so tall and of such small diameter, as to be easily blown down and, in places, they make almost impenetrable windfalls. These windfalls are chiefly in sections 10, 11, 14, 15, 22, 23, 26, 27, 19, 20, 29 and 30. In these sections there is much timber suitable for fencing. The timber is suitable for any purpose to which such timber can be applied in its round condition; it is hardly large enough to saw. There are places in the westerly part of the township along Grease creek where some hay could be cut; but generally, where there is grass suitable to make hay, there is too much brush. There is plenty of good water. Grease creek is a fine stream of clean, wholesome water of permanent flow, and it has several good sized tributaries. There are no floods to cause damage. There are no water powers. The climate is about the same as at Calgary. There is an abundance of wood for fuel. Most of the outcroppings of rocks on the hills show sandstone and along the streams at many points, such stone suitable for building was seen. No minerals were observed. The game consists of partridge, prairie chicken and deer. We caught an abundance of fine trout in Grease creek.—*John Ayles, D.L.S., 1904.*

Township 30.—This township is situated about due west 26 miles from Carstairs, a station on the Calgary and Edmonton railway, but is easier of access by way of Didsbury, another station on the same line of railway, thence through township 31, range 5, through which township it would be required to have a wagon road constructed. At the present time it can be reached only on foot or by means of pack-horses. My way of ingress and egress was by means of the south boundaries of sections 1 and 2, which, however, involved the necessity of crossing several very high hills. From near the southeast corner of this township a very fair lumber road exists, leading to the sawmill on Little Red Deer river in township 31, range 4. The soil is partly of a sandy nature and partly a stiff gravelly clay; black loam was met with in a few instances. It is not very well adapted for the raising of crops, owing to climatic conditions, but may ultimately become a good grazing country. It is a bush township, except some of the flats in the vicinity of Fallentimber river, which, where not open, are covered with willow and willow scrub. The southerly and westerly parts are very hilly, the valleys between the hills are generally of a swampy nature. The timber consists of jackpine, poplar and spruce, the former predominating, but not of any great commercial value. No hay meadows of any extent were met with. Fallentimber river runs easterly through the northerly tier of sections, the current varying from three to four and a half miles an hour, the water varies in depth from six inches to four feet on the outside, the average depth probably being a foot and a-half, and it averages about one chain in width. Marshes, partly of the nature of quaking bogs,

extend south southeasterly from near the river through part of sections 29, 28, 21, 16 and 15, narrowing down to a valley about 5 chains wide through sections 10 and 3, a small creek is formed, or rises, in this marsh, somewhere on section 16, emptying through the above mentioned valley, southerly, into Little Red Deer river. The water, generally is but very slightly alkaline, and, it appears permanent. There are no available water powers. As regards climatic conditions, I may state that my camps were generally pitched in low places, and here summer frosts were of very frequent occurrence, but it is quite possible, that on the higher lying lands, injurious summer frosts may not prevail. Any quantity of timber is available for fuel, much of it lying down, but no coal of any description was met with. Sandstone rock is exposed on the tops of all the high hills, but is not available for quarrying and is of no commercial value. No minerals were observed. An Indian packtrail traverses this township in a northerly direction from Morley to the 'Stony Indian' hunting grounds, north of Red Deer river. It is well beaten, but passes occasionally through muskegs that are very soft. Signs of game, such as 'white tail' deer, were frequently seen, also partridge and grouse, and Fallentimber river furnished us with many a meal of speckled trout and greyling. Much fallen timber was encountered in various parts of this township, more especially in the southwest quarter. Were any fire to get in, a pretty clean sweep would be made, which however, for any incoming settler, or rancher, would be rather beneficial than otherwise. Most of the township, now covered with jackpine, is of no value, whereas, if it were removed, by fire, or any other means, the township would, in my opinion, become valuable for grazing purposes.—*C. F. Miles, D.L.S., 1904.*

Township 31 (north boundary).—The country traversed by this line is very hilly and with the exceptions noted all heavily timbered with spruce, jackpine and poplar. Red Deer river is crossed on section 31. A considerable amount of horse power could be developed without a very large outlay near the boundary. A seam of coal about two feet in width outcrops on the south side of Red Deer river. No other minerals were met with.—*H. B. Proudfoot, D.L.S., 1904.*

Township 32.—A trail which I have not travelled over passes along the south side of Red Deer river, striking the railway at Morley. There is another trail to township 32, range 5, which leaves the Calgary and Edmonton railway at Olds. The northeast part of the township, north of the Red Deer is a gravelly plain mostly prairie with scrub and very poor soil. The northwesterly part is hilly with small poplar; the southwesterly part, hilly with spruce and poplar. The southeasterly and central southerly portions have large spruce. There is good pasture on the plain north of Red Deer river also amongst the timber in the northwesterly portion. There is no hay south of the river. Red Deer river is the only stream of any size, but there are also a few small brooks and springs. Power could be developed in the Red Deer in the southwesterly part of the township without a great expense, and small liability of flooding. There was some cold weather in March, but the days were generally bright and warm. Snow was disappearing very fast. Stone quarries could be developed in the southwest and central portions along the Red Deer, but considerable stripping would have to be done. Several outcrops of coal were noticed in the southwest portion about 2 feet in thickness. No other minerals were found. Chickens, partridges and a few deer were seen. McDougall's winter cattle sheds—now abandoned—were situated on section 21.—*H. B. Proudfoot, D.L.S., 1904.*

Township 33.—From the town of Olds, Alberta, the eighth base line was followed to its intersection with Red Deer river in range 5. A ford was made opposite McDougall's ranch. The south side of the valley of Bearberry creek was then followed westward to the eastern boundary of township 33, range 6, west of the fifth meridian. A trail was then located leading across section 12, then crossing Bearberry creek to the north side, then leading across sections 11, 15, 21, 20 and 19. The route across the

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township is obstructed by numerous small swamps and creeks, which it was found necessary to corduroy in places, and much brush had to be cleared. The southeastern portion of the township is generally black loam, but it seems to rest upon cold subsoil. Numerous small swamps, however, occupy a large area of land. The northwest portion of the township is rolling ridges with swamps between. The soil is sandy clay. The whole township is adapted to the growth of cereals. The valley of Bearberry creek, averaging two miles wide, is covered with scrub willow and scrub birch. Patches of spruce, six to twelve inches, lie along the creek. Numerous swamps occur. North of the valley of the creek the township is covered with a dense growth of small poplar and scattered jackpine. South of the valley of the creek the township is timbered with jackpine and spruce, six inches to twelve inches. The open country is represented by swamps and muskegs and steep hill sides. The only timber of commercial value is located on section 6, west half section 5, southwest quarter section 8 and south half section 7. Small swamps abound in all directions which afford a coarse variety of hay. No permanent supply of water is present except Bearberry creek, which has few feeders in this township. Bearberry creek offers no facilities for constructing water power. The climate is similar to that prevailing in other parts of northern Alberta, summer frosts being usual. Much windfall affords much good dry fuel in all directions. No rock in place or outcrops were observed. Minerals appear to be entirely absent. Grouse, prairie chicken and partridge are plentiful, tracks of deer and bear were frequently noticed.—*A. W. Ponton, D.L.S., 1904.*

Township 35.—This township is accessible from the northeast by a trail on the north side of Raven river, which trail can be made a very good road in ordinary seasons, and Raven river, a small stream about thirty feet wide, could be bridged. The soil is mainly clay with a few places where black loam is found on clay subsoil. It is broken across sections 25, 26, 27 and 28 by a ravine about two hundred feet deep, through which a small stream flows from its head in section 19 and which stream is gradually enlarged by tributary streams flowing from the north and south until it becomes about twenty feet wide and nine inches deep, with a current of about three miles per hour, on section 25. From this stream the land rises towards the south for two miles, where the country becomes hilly, with small sloughs and ponds between them, and then descends towards the southwest. Along the north boundary the land descends generally to Raven river in the next township (35, R. 6). Altogether the township is broken too much by hills, ravines and creeks to be a good farming country, although where grass grows it shows a very luxuriant growth. Along the creeks are a few spruce large enough for small sawlogs, but too few for commercial use. Also there are a few small bunches of jackpine from seven to ten inches in diameter, but short and with limbs to the ground. The remainder of the timber is poplar, willow and poplar brush, very thick generally and of no value, except for fuel. The few hay meadows are small and not at present of value, being generally full of scrub and willows. Water is invariably good; no alkali was found in this township. Streams are all small and would not be available for water power. Summer frosts occur, I am told. I did not find any coal or lignite, nor stone quarries or minerals, nor was there any game seen, of any kind, although I am told that the Stony Indians range through this country, finding deer and moose in the fall and bear in the spring. Speckled trout are plentiful in the larger streams. When the land is cleared it should be good ranching country, as the soil is capable of growing good vegetation, and the water the best that can be had anywhere.—*Henry W. Selby, D.L.S., 1904.*

Township 36.—The best route to the township is from Innisfail via Markerville and Raven river. The road was in bad condition in the spring, but in good order later on in the season. The country is covered with small timber namely poplar, spruce, jackpine and willows. There are a few openings in the timber. There is a scarcity of hay, which is marsh hay of rather poor quality. The country is well

watered and the water is fresh and good. This is one of the characteristics of the country. The south branch of Raven river traverses the township in an east and west direction near the two mile cross line. It is a stream about thirty links in width. It is a very crooked stream with a gentle current and it is from one to three feet in depth. Clearwater river cuts across the northwest part of the township. It is a large river with a valley one hundred and fifty to two hundred and fifty feet in depth. It has a very swift current of about six miles an hour. In this township the valley bed of the river is from three to ten chains in width and this is practically full of water in the freshet stage, but partly bare in the lower stage of water. At an average stage of water it is from three to eight feet in depth. In addition there are many small creeks all affording good water. There are no defined falls in the Clearwater, but the general fall of the river is considerable, especially in the rapids and water power in plenty could be developed by building dams. The climate is pleasant, but a good many severe frosts were observed. Several settlers came in after the survey and seemed to be of the opinion that grain would do well. Fuel in plenty is to be had everywhere, being composed of poplar, spruce and jackpine. No coal veins or stone quarries or minerals were observed. Colours of gold can be found in Clearwater river. Game is fairly abundant such as bear, moose, deer, geese, grouse, rabbits and duck, and fine trout can be caught in abundance.—*Thos. Drummond, D.T.S., 1904.*

Township 37.—The township can be reached by road from Olds or Innisfail, which was in bad order in the spring, but as the season advanced, it was in good order. The soil as a whole is more or less sandy especially to the west of the Clearwater, but there are many good sections to the east of the Clearwater suitable for farming or ranching. The country is covered with scrub poplar and jackpine to the west of the Clearwater, but there are open places to the east of the river. Hay meadows are scarce and the hay is not of a good quality. Good fresh water and numerous and permanent spring creeks are in abundance. Clearwater river is a large stream. In the summer it is from three to eight chains in width with a very rapid current probably six miles an hour. It is from three to eight feet in depth and it is impossible to cross it till late in the season. In this township the gravel bed of the stream is wide as is shown on the traverse plan. This bed practically runs full in the high stage, but it drops in the fall when it is comparatively a small stream. Numerous beautiful spring creeks are found practically all over the township. Water power could be generated from Clearwater river as the current is rapid and the fall considerable, but there are no falls. Summer frosts were numerous but apparently more or less local and near the large muskegs. Fuel is plentiful in the shape of spruce, jackpine and poplar, but no coal was observed. No stone quarries or minerals were observed. Moose, small deer, bear, grouse, geese, &c., are fairly numerous and beautiful trout are abundant.—*Thos. Drummond, D.T.S., 1904.*

Township 38.—The best route is by way of Innisfail and Raven river. The road was not very good in the spring, but was excellent later on. The top soil is underlaid by clay, and where dry it is fairly good, but a large part of the township is muskeg, which in many places is unsafe, even to walk upon, and for this reason it is not suitable for agricultural or other purposes except a strip along Clearwater river in the southwestern part of the township. The surface is covered with timber, poplar and jackpine on the dry land and spruce and tamarac on the low lands. It is scrubby and small as a whole. There are practically no hay meadows in the township. The water is fresh and sweet, indeed there is no alkaline water to be found, and the supply is sufficient and permanent. The Clearwater passes through sections 5, 6 and 7, and onward through township 38, range 7. It is a large and important stream about 3.50 chains in width and about five feet in depth at a medium stage of water. There are two lakes of considerable size, lake No. 1 in sections 11, 14, 13 and 12 and lake No. 2, in sections 11 and 2. Both contain fresh water. Water can be obtained

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almost everywhere by digging. Water power could be obtained from the Clearwater by building dams, and some of the valley flats might be flooded to a depth of about a foot for a day or two in the freshet stage. The climate is pleasant, but a good many summer frosts were observed probably due to the proximity of the muskegs. Abundant fuel is to be found everywhere in the shape of poplar, jackpine, spruce and tamarac but no coal veins were observed. Sandstone was exposed along the banks of the Clearwater. No minerals of economic value were observed. Bear, deer, moose, rabbits, grouse, geese, duck, were seen and their tracks were numerous; and fine trout are abundant in the river.—*Thos. Drummond, D.T.S., 1904.*

Township 39.—This township is accessible by way of the Mountain House trail leading from Lacombe and traversing the northern part of the township from east to west. The portion of the trail leading through this township is for the most part in good condition. The soil is clay or clay loam in most places and the surface level or rolling with very small hills. There is not much open prairie. There is a heavy growth of small timber consisting of spruce, jackpine, poplar and balsam of Gilead, little of which is large enough for lumber. There is not much hay. There are very few creeks, and none of any considerable size. About one-fourth of the surface is covered with muskegs, sloughs or swamps. Summer frosts are prevalent. The average rainfall appears to be small. Winters are not severe and snow does not fall to any considerable depth. There is an abundance of wood suitable for fuel. No indications of coal were noticed. No minerals were observed. Game consists of bear, deer, partridge and occasionally a few ducks and prairie chickens are seen.—*Geo. Edwards, D.L.S., 1904.*

Township 40.—The trail leading from Lacombe known as the Rocky Mountain House trail touches the south boundary of this township. In dry seasons it is good, but in wet seasons some of the sloughs it traverses are next to impassable. The soil is mostly clay loam affording good grass in the few open spaces. Surface is rolling or level with few hills, but a considerable portion of swamp land. The timber consists of spruce, poplar and balsam of Gilead with some jackpine. There is very little large timber. Hay is not abundant. The creeks afford a fairly good supply of fresh water. Lobstick creek crosses the northeast corner of the township and is there about 30 links wide and one to two feet in depth. Horsepound creek crosses the township from northwest to southeast. It is about 20 links wide and 18 inches deep with moderate current and low banks. There are no water powers. Winters seem to be mild here with light snowfall. Summer frosts prevail, and would prevent growth of anything but hardy cereals. There is an ample supply of wood for fuel, but no indications of coal were observed. There is no stone of any kind observable. No minerals were found. Black bears and cinnamon bears are numerous here. Deer are also seen occasionally. Partridge are plentiful and prairie chicken are seen.—*Geo. Edwards, D.L.S., 1904.*

Township 41.—This township is reached by way of the Rocky Mountain House trail from Lacombe. The trail is in fair condition and passes about six miles south of the township. A branch trail, made by the Red Deer Lumber Company, reaches the south boundary of the township. The soil is chiefly clay, suitable for grazing purposes. There is very little open prairie. The timber consists of poplar, balsam of Gilead and spruce, mostly of small size. There is not much hay. There are several creeks, the largest, Lobstick creek, rising in the northeast corner and traversing the township in a southeasterly direction. When it leaves the southern boundary it has a width of thirty links and depth of one to two feet, with moderate current and low banks. The water in all the creeks is fresh. There are no water powers. Climate is not severe in winter. Snowfall is light. Summer frosts were observed in July and August, sufficiently severe to form thin ice on pools in low lying swamps. There is

plenty of wood suitable for fuel, but no indications of coal. There is no stone suitable for building. No minerals were found. Bears were frequently seen, the cinnamon bear most often. Deer were seen occasionally. Partridge and prairie chicken were numerous.—*Geo. Edwards, D.L.S., 1904.*

Township 48, Range 6, W. 5—(North outline).—The base line in range 6 crosses an undulating country thickly covered with poplar and spruce varying in size from 10 to 14 inches diameter and suitable for lumbering operations. On the northeast quarter of section 35 Buck creek flows northeasterly into the Saskatchewan. Its rate of current is two miles per hour and the depth of water is six inches. The soil, owing to the great proportion of sand it contains is rated, third class.—*Louis E. Fontaine, D.L.S., 1904.*

Township 51.—This township is reached by a wagon road coming in from the southeast, which was opened by intending settlers in the season of 1904. It is a new trail not in very good order, I was told. Not having travelled on it I cannot give a fair report of its condition. We reached it partly by an old Indian pack trail from the Indian reserve on township 52, range 4, and partly by travelling through the bush. The soil is generally a fair coat of black loam over a clay bottom, suitable for all kinds of grains, but there are quite a number of swamps, which will reduce considerably the productive area of the sections. The surface is generally heavy rolling country covered in the southern portion mostly by a growth of small poplars very easy to clear. The timber grows larger towards the north, but in no part of the township will there be any considerable difficulty to prepare the land for cultivation. The timber is mostly poplar except in swamps where there is a certain quantity of spruce six inches to twelve inches in diameter which may be sufficient to supply the first wants of the settlers for building purposes. There are not many hay sloughs that I have remarked. The water where found was good drinkable water, especially in the creeks, but I believe it will be scarce in dry seasons. There are no water powers. The climate is the same as in the neighbourhood of Edmonton. Poplar and spruce is the only kind of fuel available in the township. I have remarked no coal but I believe it will be easily procured from the banks of the Saskatchewan. There are no stone quarries nor minerals. Game is not plentiful. Prairie chicken and partridge I have met, but not a great many. We have crossed tracks of moose and deer and we have seen a few bears while at work. Fur bearing animals seem to be scarce.—*Geo. P. Roy, D.L.S., 1904.*

Township 52.—There is no trail in this township. I was obliged to cut a pack trail in bush to carry my outfit on horseback. It was a very hard job to move the camp in thick bush just in the time when the mosquitoes and flies are worst. The soil in the north portion, which is nearly all sandy loam with clay subsoil is more suitable for farming purposes than the south portion which is more swampy. The surface is rolling, some places broken and hilly, and covered with thick bush, poplar, spruce, tamarac, jackpine, cottonwood, birch, willow and scrub. The poplar predominates in the north portion, while the spruce and tamarac are in greater quantity in the south portion. There is enough hay in the marshes and along the ridges of the creeks to supply the settlers who may come into this township. I met good water, and in great quantity nearly everywhere, but especially in the creeks, which are full of fish. The greatest objection settlers would have against coming into this township would be the absence of roads, and the work involved in clearing a forest country. This country is very poor in game.—*C. E. Bourgault, D.L.S., 1904.*

Township 52.—The main feature of this township is the chain of large swamps which cut it off from the township south of it, and from which direction, outside of sections 4, 5 and 6 the only way to get north is along the eastern boundary of section 1. The western boundary is also situated in a large swamp, which extends nearly four miles from the southwest corner of section 6 to the northwest corner of section

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19. The building of roads from the west and especially from the south will consequently be a heavy undertaking. A pack trail partly opened by me leads from the northwest corner to Gray's store on section 28, township 53, range 6, situated along the wagon road coming from the half-breed settlement of Lake St. Ann. At least half of the south third of the township is covered by muskegs. The remainder is a succession of ridges turning into hills towards the north, the soil of which is a good coat of black loam over a clay subsoil. It will be a good farming country when the bush is cleared from it. There are a few patches covered with only a light brush, but the country is mostly a bush country lightly timbered towards the south, and the timber grows larger and denser going north until the base line is reached. Poplar is the main kind of wood, but good spruce and some jackpine are also found on nearly every section. There are very few hay sloughs that I have remarked. Water is good wherever found. There are no water powers. The climate is the same as in the vicinity of Edmonton. Wood as fuel or for building purposes is readily available all through the township. Coal exists in the neighbouring township. There are no stone quarries nor minerals that I have remarked, and game seems to be scarce.—*Geo. P. Roy, D.L.S., 1904.*

Township 53.—From Wabamun lake there is a trail crossing this township in the middle part on the north side of Isle lake, but the best way to come into this country is by Lake St. Ann settlement. The south part is rather rolling, while the north part is quite level, especially near Isle lake. The soil is generally a good black loam with clay subsoil, but adjoining Isle lake it is swampy. This township is thickly wooded with poplar from four to fourteen inches in diameter and about fifty feet high, with spruce near the lake and on the ridges of the creeks, and also with pine, tamarac, willow bush and scrub. I would not encourage any settlers to take a homestead here with the intention of opening a forest country, but it is a good place for stock raising, especially near Round lake, where there is plenty of hay, several hundred tons, and a good place to winter cattle.—*C. E. Bourgault, D.L.S., 1904.*

Township 53.—Isle lake is the principal feature of this township, from the northeast corner of which it extends for five miles, its western limits being at a distance of a quarter of a mile from the southwestern corner of section 28. The place is reached by the road leading from Lake St. Ann to Jasper House. Wagons are often used as far as Gray's store on the southwestern quarter of section 28. Beyond, although vehicles can go a few miles, it is considered only as a pack trail. Wagons travelled on this trail to any extent only since last summer and it is not in a very good condition, but teams with loads of two thousand pounds can get through easy enough in dry seasons. The soil is generally a coat of black loam from six to eight inches deep over a clay subsoil, well suited for farming purposes. The surface is heavy rolling, hilly in some parts, and thickly wooded on the south side of Isle lake. On sections 28, 29, 30, 31, 32 and 33 there are large patches of prairie, the remainder of these sections being covered with light brush only, which can easily be cleared. The northern part of the township is certainly the most advantageous for immediate settlement. As already said, south of the lake the country is thickly wooded. Poplar predominates but spruce is met nearly on every section and along the lake there is quite an amount of it, and it is good sized timber. The west end of Isle lake is a large hay slough capable of producing an immense quantity of hay, as well as the borders of Round lake, where Mr. Gray cuts nearly all the hay he requires for his twenty horses and his cattle. The water is good in Isle lake, Round lake, and wherever found elsewhere. There are no streams able to produce water power of any consequence. The climate is the same as in Edmonton. There is plenty of wood for fuel and building purposes for years to come if used with judgment, and there is coal on township 53, range 5, joining on this one to the east; no doubt it exists also on this township. I have remarked no stone quarries nor minerals of any kind and game outside of prairie chicken and duck in the fall is not plentiful.—*Geo. P. Roy, D.L.S., 1904.*

Township 54.—This township is reached by wagon road, which goes through Lake St. Ann settlement, coming from Edmonton and going as far as Gray's store situated on section 28, township 53, range 6. The last six miles of it were used for vehicles for the first time last summer, and it is yet crooked and narrow, with a few soft spots. From Gray's to Jasper House it may be considered only as a pack trail, although wagons may go a few miles further. There is a branch of this trail running nearly west coming into the township on section 24 and catching the river Pembina on section 30, but on account of the swampy nature of the ground travellers prefer going around by Gray's, from where turning northwest they come to the Pembina near where the west outline intersects the river on section 19. The Pembina flows through the northwest corner of the township and Isle lake cuts out part of the southwest corner of section 1. The numerous swamps which are met all through reduce considerably the farming area, but on solid ground the soil is a good coat of black loam over a clay subsoil, promising good crops when the ground is cleared. The country is heavy rolling with a few patches of prairie, especially on sections 5, 6 and 7. There are quite a number of windfalls in the township where a fierce fire must have passed not many years back, judging by the amount of dry burnt wood met all over. As a consequence, the clearing would be easy and a few fires would in a short time make an open country where the bush now stands. The timber is mostly poplar on the solid ground, with spruce in the swamps but neither kind of wood, except in some places, seems to be of much consequence, although settlers will find all they require for building purposes, and for fuel on the start. A few tons of hay can be cut in a slough on section 6, and around the lakes on sections 4 and 15. Water is good in Isle lake, in the river and wherever found elsewhere. The Pembina is a river averaging three to five chains wide, three feet deep, with a current of about four miles an hour. It might be possible by building a dam near the north boundary of section 19 to produce one hundred horse power. Climate, as in all the surrounding region, is the same as in Edmonton. As already said, there is plenty of wood for fuel for a few years until the country is entirely settled, and coal is found on Pembina river three miles west of the southwest corner of this township. I have remarked no stone quarries nor any minerals of any kind, and game is not plentiful.—*Geo. P. Roy, D.L.S., 1904.*

Township 56 (north outline).—In this range the base line passes over a gently rolling country comprising clumps of poplar of an average of six inches diameter alternating with small open patches mostly covered with willow scrub. Soil is rated third class.—*L. E. Fontaine, D.L.S., 1904.*

Township 60 (north outline).—In this range the country is rolling and in the depressions are to be found muskegs and tamarac swamps. It is thickly wooded with poplar and spruce suitable for lumbering. Throughout the range the soil is of poor quality and rated third class.—*L. E. Fontaine, D.L.S., 1904.*

Township 72 (north outline).—About one-half of section 36 is scrubby prairie with bluffs of small poplar, and is excellent land. The remaining half of section 36 and half of section 35 is swamp of spruce and tamarac, after which for a section and a half I found dense scrub of willow with scattered poplar and a sandy soil of very poor quality. The remaining half of this range has a soil of fair quality and is timbered with poplar, birch and spruce, of fair size, with a few swamps of little importance.—*Edgar Bray, D.L.S., 1904.*

Range 7.

Township 27.—This township is easy of access by wagon from the south, either from Morley or Cochrane, both stations on the Canadian Pacific railway. From the former place by wagon road it is about 10 miles partly pretty stiff up-hill to the south boundary and from the latter place it is about 20 miles by wagon road to the east

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boundary of this township. A fairly good road runs through sections 1, 2, 3, 4 and 5, thence northerly into section 21, this is about the extreme limit to which a wagon could be brought. The southerly tier of sections comprising the bench adjacent to the valley of Ghost river contains some fairly good lands generally consisting of a black sandy loam, with a clay or gravelly subsoil. Hitherto only green crops have been grown here as far as I can learn, and it appears to me rather doubtful if any crops would mature. All but the southerly tier of sections are very hilly; the hills in several instances rising to a height of up to 500 and 600 feet by barometrical reading. The level bench lands north of the river attain also a considerable altitude above the bed or flats of Ghost river. Along the banks of the north branch the flats are more contracted, running in fact in a very much narrower bed, although the volume of water does not appear to be less than in the main stream. Much of the level land is also scrubby, although most of the hills facing the valley are nearly bare of timber and brush. There is some good timber scattered through this township, but nowhere in sufficient quantity to justify any part being designated as a timber berth. The southwest quarter contains probably more timber than any other part of the township. On the high promontories facing the valley of Ghost river, groves of Douglas fir are frequently seen, probably up to 30 inches in diameter, few of these, however, appear to have any commercial value, many having the appearance of being unsound. It might be desirable to reserve the timber for the needs of future settlers, or for the conservation of the water supply. A good hay meadow, averaging probably 10 chains in width, extends through parts of sections 17 and 8; probably a couple of hundred tons might be secured here. Good water is plentiful from rivers and spring creeks. The main branch of Ghost river traversing three southerly sections, and the north branch of the Ghost river running diagonally in a southeasterly direction through this township. The water in these streams at the time of survey was low, but flows with considerable velocity. The north branch including the dry bed, averages about 2 chains in width, but the stream itself was only about 1 chain. The main branch bears signs of being of much larger volume at times, as the bed in most places is from 5 to 10 chains in width; but the water at present only running in channels, sometimes 2 or 3, each less than a chain in width and with a current of 4 or 5 miles an hour. The immediate valley of the river bears no sign of periodical flooding—there is no water power available, the bed of the river being too wide to dam economically. With regard to summer frosts it is altogether likely that they prevail in this township, the same as in the township to the north, but perhaps not to the same extent. In parts of the township to the south crops mature, I am informed. Both wheat and oats are grown here, but only for green feed. Wood for fuel abounds and can be procured all over this township. No signs of either coal or lignite were observed. Stone is plentiful both on tops of the hills, and in the dry bed of the river, but no quarries exist. Neither were minerals of any economic value observed. Owing to the close proximity of this township to the Stony Indian reserve game does not abound as in the northern townships; some few partridges and chickens and an occasional sign of deer were observed. Speckled trout appeared plentiful in the north branch of Ghost river, but in the main branch none were observed. I was, however, informed that higher up this stream fish were much more plentiful. In conclusion I may state that in my opinion this township is not at all adapted for general or even mixed farming, but only for grazing and cattle raising.—*C. F. Miles, D.L.S., 1904.*

Township 28.—This township is somewhat difficult of access. From the north it can only be approached, in summer by pack horses, or in winter, when the marshes are frozen, by sleighs. From the south it can be approached within two miles of the south boundary by wagon from Ghost river valley. As for getting into the township by wagon that is quite out of the question. The nearest station to reach this township would be Morley on the main line of the Canadian Pacific railway. The soil

is mostly of a sandy nature, with a clay and stony subsoil on the side hills, the bottoms generally being marshy and the hills stony and rocky. Owing to its elevation in altitude and general broken nature, I doubt if any crops could ever be grown here. The surface is exceedingly hilly, sometimes traversed by high ridges, ranging from three to five hundred feet above the adjacent bottom lands and frequently broken by high hills rising and falling in every direction, without forming any regular ridges. It is all densely wooded with the exception of some parts, principally southern exposures of hills, that have at one time been burned over and are now covered with brush and scrub and second growth jackpine and poplar. It is broken by Little Red Deer river cutting its way easterly through the northerly two tiers of sections and one of its tributaries through sections 21, 22, 23 and 24. Adjacent to these streams occasional small flats are met with, sometimes open, but of small areas. Travelling up the valleys of these streams one would be compelled to cross them perhaps half a dozen times in a mile. Jackpine and spruce timber of very fair dimensions are pretty well scattered through this township, more particularly in the western half, attaining in some instances 24 to 28 inches in diameter. It would be difficult to get at and almost impossible to get out with teams. Of hay lands in a natural state there are hardly any, the low lands generally being of a marshy nature. This township is well supplied with water, spring creeks being quite numerous. The Little Red Deer already alluded to above has an average width of about eighteen or twenty feet, has a stony and sometimes rocky bed, and an average depth of about nine inches. The small stream tributary to the above has an average width of about six feet and depth of six inches. Neither of these streams appears liable to overflow, or, if they should break their bounds, could do any damage. The banks of the Little Red Deer in some places approach one another quite closely, and there would be difficulty about constructing a dam or dams, which, however, would be of no material benefit for any purpose. The north branch of Ghost river traverses diagonally through section 6; the bed is of an average width of about two chains, but the stream itself, at time of survey, would not average one chain in width with a depth of about twelve inches—not enough water to float logs down it—except during freshets, which however is not an annual occurrence, so I am informed. The climatic conditions are such, I believe, as to prevent the ripening of any crops, summer frosts being the rule rather than the exception. For fuel jackpine, poplar and spruce is available in any quantity. No traces of coal or lignite were observed. Neither are there any stone quarries. Sandstone crops out in the tops of nearly all the hills and ridges. No minerals of any economic value were observed. Signs of bear, deer, rabbits and partridge were frequently seen. As already stated, this township is exceedingly rough; its only product of any value at the present time, would be its timber, and if the snow lies here in the winter, as it does not in some townships farther south, roads might be constructed along the marshy bottoms for conveying the same out into the open, but the haul to the nearest railway is a long one. A great deal of fallen timber is scattered all over this township, making it almost impossible to get through with pack horses. All the old Indian pack and hunting trails are blocked by this timber and therefore abandoned. Signs of cattle and horses were observed, but it is not apparent what would take them into this township, the limited areas of pasture being very few.—*C. F. Miles, D.L.S., 1904.*

Township 30.—This township is situated due west about 32 miles from Carstairs, a station on the Calgary and Edmonton railway, but is probably more easy of access by way of Didsbury, another station on the same line and by way of the sawmill in township 31, range 4, on Little Red Deer river. From here wagon roads lead to the northeast corner of township 31, range 5 and to the southeast corner of township 30, range 6. From the latter point only pack horses could be got through owing to the high hills, extensive marshes and dense woods and windfall to be traversed to reach the township in question, whereas from the former point although densely

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wooded, the country is more level and less swampy. A wagon road was at one time (about 5 years ago I am informed) cut through this township from Morley to Red Deer river, but owing to wet seasons, it is not now available. If, however, a series of dry seasons should return I have no doubt this road may be utilized again. There would be no difficulty in reaching this township in early winter after the muskegs are frozen. The soil with few exceptions consists generally of a stony and gravelly clay, and is rated nearly altogether as 3 or 4 class. Some crops might possibly be produced here if climatic conditions are favourable. With regard to the surface of this township the sections north of Fallentimber river up to sections 25 and 33 are fairly level or undulating and along both sides of the river there are some very fair flats; where open, well adapted for pasture lands, stony in places and narrowing to smaller dimensions up stream. The southerly and westerly parts are either high, rolling or hilly. From the south high ridges extend northwesterly into this township within a short distance of Fallentimber river; these ridges are divided by marshes running in the same direction up to the river. These marshes in dry seasons may furnish good hay, but at time of survey were frequently of a boggy nature. The northeast quarter of this township is very hilly. There is much *brulé* and windfall all through the township generally replaced by a new growth of Banksian (jack) pine. This township is wooded with jackpine, poplar and spruce in quantities in the order named, jackpine predominating. It is of no commercial value owing to the difficulty in approaching it or getting it out. There are a few groves of fairly good spruce in the flats along Fallentimber river which at times of high water might be brought down the river to its outlet into Red Deer river. Here there was a sawmill, I am informed, from which, however, the machinery was removed recently. There is also a grove of good dry standing timber on section 36; north of the creek both jackpine and spruce are fire-killed. The water in Fallentimber river is slightly alkaline, but not sufficiently so to affect the fish, which are plentiful. The smaller streams, which are numerous generally, contain good water and are fed by springs—the supply I would consider both sufficient and permanent. Fallentimber river averages about 1 chain in width and varies from 1 to 4 feet in depth with a current of about 4 miles an hour. The land does not appear liable to be flooded to any extent, and there are no available falls to be utilized for power. As regards climatic conditions, I may state from my experience in August that frosts are of very frequent occurrence; my camps, however, being generally pitched in flat or low places, it is quite possible that the higher lands may be comparatively free from summer frosts. Fuel is easily obtained, both dry and green timber being in abundance all over the township. No signs of coal or lignite float or otherwise were observed. Sandstone is exposed along and near the tops of nearly all hills and ridges, but no quarries exist, nor were any minerals of economic value noticed. By way of game some partridge and grouse were seen along the creek flats or in the windfall. Speckled trout and greyling also abound in the river. Both signs of deer and bear were frequently observed. —C. F. Miles, D.L.S., 1904.

Township 33.—The nearest railway point is the town of Olds, Alberta. From Olds the eighth base line road was followed to its intersection with Red Deer river, near where a ford can be made. The south side of the valley of Bearberry creek is then followed to the west boundary of section 12, township 33, range 6, west of the 5th meridian. A crossing is then made to the north side of the creek and a trail crosses sections 11, 15, 21, 20 and 19 to the west boundary of the township. The trail then enters section 24, township 33, range 7, and crosses sections 24, 23, 22, 27, 28 and 33. This route crossing township 33, ranges 6, and 7 is obstructed by numerous small swamps and creeks which required to be corduroyed in many places, and it was found necessary to cut out much bush. The soil is generally yellow clay; forest fires in the past have consumed the top soil over a large portion of the township. The soil is well

adapted for the growth of cereals. The surface is divided between extensive valleys and high rolling hills. Large timber, poplar, spruce and jackpine is found in separate patches, from one-half to one mile square; the township is generally grown up with second growth poplar, willow and scrub birch. The open country is represented by numerous small swamps and muskegs. Large spruce, suitable for commercial purposes is found on sections 1, south half 12, south half 3, south half 4, south half 5; and all of 6, 7, 18, 19 and 30. Small swamps abound in all directions which afford a coarse variety of hay. Water is well distributed, Bearberry creek branching in many directions. The water is clear and sweet. The fall of Bearberry creek is not sufficiently great at any point to afford power in sufficient quantity for commercial purposes. The climate is similar to that generally prevailing in other parts of Alberta, but summer frosts prevail owing to the high altitude. Traces of perpetual frost were found in spots at eighteen inches. Much windfall offers an abundant supply of good dry firewood and is well distributed. No stone suitable for building was observed. No trace of minerals was found. Grouse, prairie chicken and partridge are plentiful; and tracks of bear and deer were noticed.—*A. W. Ponton, D.L.S., 1904.*

Township 34.—From the town of Olds, Alberta, the eighth base line road was followed to its intersection with Red Deer river, where a ford was made opposite MacDougall's ranch. The south side of the valley of Bearberry creek was then followed to the western boundary of section 12, township 33, range 6. A crossing was then made to the north side of the river or creek and a trail was then located leading across sections 11, 15, 21, 20 and 19 to the west boundary of the same township; the trail then enters township 33, range 7 and crosses sections 24, 23, 22, 27, 28 and 33 to the north boundary of the same township. The trail then enters township 34, range 7, and crosses section 4—through which James river flows from west to east—and continues to a point between sections 9 and 10, to where my central camp was located. From this camp pack horses were employed to move about as circumstances required. The route across townships 33, ranges 6 and 7 is extremely rough, and is obstructed by numerous small swamp and creeks, and it was found necessary to clear much bush. The valley of James river was afterwards used as a route for transporting supplies and moving camp, but the river must be forded many times before reaching its junction with Red Deer river, and this is only possible at low water. With the exception of the valley of James river the soil of the township is barren, being composed of a light sandy clay with stony or gravel subsoil. In the valley of James river patches of sandy loam occur. Generally this township is unsuited to the growth of cereals. The south portion is much broken by the valley of James river. The central and northeastern portions are flat and the northwest portion is cut up by the valley of Raven river. The valley of James river is covered with patches of spruce, poplar and willow, with occasional small prairies and swamps. The central and northeast portions are wooded with jackpine, poplar and ground cedar. The northwest portion is wooded with jackpine and poplar. Along the banks of James river frequent small patches of spruce, from six to eighteen inches occur. No other timber of commercial value is found in the township. Practically no hay exists. The valley of James river is well watered by small creeks issuing from springs on the hillsides bordering the valley. James river is a stream of considerable size. Raven river affords good water in the northwest corner. The balance of the township is devoid of any permanent water supply. The fall of James river, being rapid, appears to afford numerous locations for constructing water powers with from six to ten feet ahead. No falls exist, however. The climate is similar to that prevailing in other parts of northern Alberta, and summer frosts are usual. Much windfall affords good dry fuel in all directions. No rock in place or outcrops were observed. Signs of coal were observed on the south bank of James river on sections 3, 4 and 5. The exposures occurred close to the water level, and being much weathered and air slacked its nature and quality could not be determined.

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It appeared of the lignite variety. Grouse, prairie chicken and partridge are numerous. James river furnishes trout of large size, eight pound fish being quite common and no difficulty was found in catching fifty pounds in a couple of hours. Tracks of deer and bear were frequently noticed.—*A. W. Ponton, D.L.S., 1904.*

Township 36.—The route via Innisfail, Markerville and Raven river is the most direct. It was rather bad in the spring, but good later on. The soil is somewhat light as a whole, and it has a clay subsoil. It should grow the various grains and vegetables. The surface is covered with timber, as a rule small, that on the high land being poplar and jackpine and in the low land spruce and tamarac. There are practically no wild hay meadows. The township is traversed by Clearwater river, Raven river and by numerous small streams, and there are several lakes, all of which furnish permanent water in abundance, fresh and good. Some of the valley land along the Clearwater may be flooded to a depth of about one foot in the freshet stage for a few days. The Clearwater is the principal stream and it is a large river with a gravel bed three to ten chains in width and in this width it changes about considerably. It has a swift current of about eight miles per hour and a rapid fall. At a medium stage of water it has a depth of about five feet. In high freshet stage the bed practically runs full, but for a good part of the season a fair portion of it is bare and exposed in the shape of sand bars. The south branch of Raven river is a crooked stream of about fifty links in width. It has a current of about two miles an hour and an average depth of about two feet. Water power can be developed by building dams, as the fall is rapid, but there are no definite falls. The climate is pleasant, but several summer frosts were observed. Fuel is plentiful in the shape of poplar, jackpine, spruce and tamarac, and is found everywhere. Sandstone is exposed along the river in places, but no veins of coal were observed. Bear, deer, moose, duck, geese, grouse and rabbits are apparently plentiful, and beautiful trout of large size are abundant. No minerals of economic value were observed except a few fine colours of gold in Clearwater river.—*Thos. Drummond, D.T.S., 1904.*

Township 36.—This township being cut by Clearwater river from west to east, about one and a-half miles north of the south boundary, is naturally divided into two distinct parts. The south part being most easily reached from the east between the Raven and Clearwater rivers and the north part by a trail crossing Clearwater river near the north boundary of township 36, range 6. The soil on that part of the township subdivided as far as could be seen was clay loam on a clay subsoil. The surface of the country south of the Clearwater is quite rolling, thickly timbered with small poplar and jackpine with some spruce along the Raven river. North of Clearwater river the surface as far as subdivided was nearly level except on the east boundary of sections 22 and 23, where it was more rolling, and the timber mainly small scrub poplar, black birch and willow, with a small belt of spruce along the north bank of the river. The spruce timber is from 6 inches to 16 inches in diameter, but is not in sufficient quantity to be of merchantable value. There are no hay meadows as far as our survey went. The water of Clearwater and Raven rivers is fresh and the best met with and both are permanent streams. Clearwater river averages between its banks fifteen chains, but except at flood time, flows in several channels amongst sand bars and gravel beds thickly strewn with driftwood, and in many places piled up several feet high. The depth of water varies from three to nine feet with a rapid current generally. Raven river is about 40 links wide and from 2 to 4 feet in depth, with a current about 2 miles per hour, and very tortuous in its course. There does not seem to be much flooding of the adjacent lands by either of the above rivers, as the land falls quite rapidly on each side of them. The climate, from the experience of the past winter, is fairly mild, though summer frosts may be looked for sometime. The only fuel seen is wood and to be had in sufficient quantity for settlers' purposes. No coal or lignite was discovered. On sections 11 and 12 the bank of the Clearwater,

on south side, is composed mainly of a soft sandstone, apparently too soft for quarries. No mineral or game was seen, but deer and bears are said to be plentiful at certain seasons.—*Henry W. Selby, D.L.S., 1904.*

Township 37.—The best route is via Innisfail and Raven river to township 37, range 6, beyond which there is no road. After the month of June the road was in good condition. The soil is a black loam with a subsoil either of sand or clay. When cleared of timber it would probably be suitable for growing the various grains and vegetables. Over a considerable portion of the township the surface is rough and hilly. The whole township is covered with timber—poplar and jackpine on the high land and spruce and tamarac on the low land. The timber is scrubby and small as a whole. There are a good many muskegs. There are practically no hay meadows. Good water is plentiful and the supply is permanent. There are several lakes, numerous creeks, and the township is traversed by Prairie creek, which is 1·00 to 1·50 chains in width and at an average stage about two and one-half feet in depth and a gentle current of about three miles an hour. There are no falls in the creek, but water power could be developed by building dams. As far as can be judged the land is not likely to be flooded by the streams. The climate is pleasant, but summer frosts occurred. Timber fuel is plentiful everywhere. Float coal was observed in the bed of the stream, but no coal veins were discovered. Sandstone is exposed along the banks of Prairie creek, and as far as could be judged of good quality. No other economic minerals were discovered. Moose, deer, bear and rabbits are apparently numerous as indicated by the tracks and grouse also are numerous. Fine trout can be caught almost everywhere in Prairie creek.—*Thos. Drummond, D.T.S., 1904.*

Township 38.—The best route is via Innisfail and Raven river to township 38, range 6; beyond this there is no road and Clearwater river has to be crossed, which river is impassable till about the middle of August or beginning of September. The road is in good order after July 1. The surface is covered with timber, which as a rule is scrubby except in the northwest corner of the township, where there is a little timber of larger size. The timber is poplar, jackpine, spruce and tamarac. There are no hay meadows, but there are a few open patches of grass along Prairie creek which afford a little feed for horses. The water is fresh and wholesome, permanent and plentiful. There are several lakes, numerous small creeks, and the township is traversed by Clearwater river and Prairie creek, both of which are important streams. Clearwater river is about 3:25—4:50 chains in width. It has a current of about four miles an hour and a depth of about five feet in an average stage of water. Water power could be developed by dams, but the fall is not so great here as higher up the stream. Prairie creek is about one chain in width, a current of about three miles an hour and a depth of about two feet. It consists of a succession of deep pools with rapids and shallow water between and in the rapids water power could easily be developed by building dams, but there are no definite falls. The climate is pleasant, but there are summer frosts. Timber for fuel is plentiful everywhere, but no coal veins were observed. Float coal was observed in Prairie creek. Sandstone is exposed along the banks of both Clearwater river and Prairie creek. Fine colours of gold can be found on Prairie creek, but it is of no commercial value. Bear, moose, deer, rabbits, grouse, geese are apparently plentiful and beautiful trout of large size are abundant in the Clearwater and in Prairie creek.—*Thos. Drummond, D.T.S., 1904.*

Township 39.—Rocky Mountain House at one time a post of the Hudson's Bay Company, is situated on section 17 of this township. A trail from that point leads to Lacombe and another to Innisfail, the latter is said to be a very good trail. The soil is mostly a sandy loam which produces a fine quality of grass in the open spaces. The largest bits of open prairie are on sections 3, 16 and 17, but most of the land is covered with small timber consisting of spruce, jackpine, poplar and balm of Gilead, only a small portion of it being large enough for lumbering purposes. There is not an abundance of hay except on the three sections of open prairie already noted. There

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are several small creeks and two rivers in this township all affording very good fresh water. Clearwater river enters the township in section three and enters the Saskatchewan at the northeast corner of section 16. Its average width is about $2\frac{1}{2}$ chains, depth from ten inches to 3 feet or more; rate of current 2:56 miles per hour. Saskatchewan river enters the township at the northwest corner of section 7 and leaves it on the north at section 33. Its width varies from four to ten or twelve chains. Depth at summer level from two to five feet. It is subject to freshets, when snow is melting on the mountains, that raise the level ten or fifteen feet. The rate of current here is 2.75 miles per hour. The right bank is for the most part in this township a precipitous cliff from 100 to 140 feet high. The left bank is low. The considerable volume of water and frequent rapids suggests the possibility of developing water power to a large extent. Summer frosts prevail here. Winters are not severe and snow usually not deep. There is ample wood for fuel. There is coal on section 16, the seam being a foot or more thick. This coal burns well with slight residue. On section 21 I observed a coal seam extending about half a mile along the left bank of the river. The seam was about eight inches thick. The sandstone cliff on the east bank of the Saskatchewan would doubtless afford good material for building purposes. I noticed indications of some one having been prospecting for gold in the gravel banks of the river, but so far as could be ascertained the search was fruitless. I understand that 'colours' are obtainable, but so fine that working for it will not pay. I found no minerals. Deer and bears are found here, also partridge and a few ducks and prairie chicken. Beavers were formerly numerous here, but very few remain. Trout, grayling and suckers can be caught in Clearwater river and are said to be quite abundant at certain seasons. Fish do not seem to be abundant in the Saskatchewan. This township affords some suitable ranching areas. Two settlers have taken up land with a view of cattle raising, and two more arrived when my survey was in progress.—*Geo. Edwards, D.L.S., 1904*

Township 40.—The Mountain House trail touches the south boundary of the township. The soil is generally sand or sandy loam, suitable for grazing purposes or the cultivation of hardy cereals. There are few open spaces, most of the surface being covered with timber consisting of spruce, balsam of Gilead, jackpine and poplar. The timber is mostly small. There is not much hay. Saskatchewan river passes through the township from south to north. Width of river varies from five to fifteen chains. Depth of water two to eight feet. The shallow places are of course the most rapid, average current being nearly three miles per hour. The banks are low and liable to be overflowed to some extent during freshet periods when the river rises ten or fifteen feet above summer level. The considerable volume of water and numerous small rapids would seem to make possible the development of water power to a large extent. There are only a few small creeks and the water is fresh. Winter climate is not severe. Summer frosts prevail. There is ample wood for fuel. No coal was noticed other than pieces of 'float' in the gravel along the banks. There is no stone suitable for building purposes. No minerals were observed. Deer seem to be plentiful. Bears are to be seen, and beavers are not entirely extinct, though the few that remain will soon disappear. Partridge are plentiful and a few ducks and prairie chickens were noticed. A few small fish were seen in the river, but they were not plentiful.—*Geo. Edwards, D.L.S., 1904.*

Township 48, range 7 (north outline).—In entering range 7, the country becomes very rough, hilly, broken and heavily timbered, and so remains until the heights on the other side of the Saskatchewan have been attained; from there the line passes over an undulating surface devastated by fire and covered with fire-killed timber and windfalls. On the northwest quarter of section 35 and the northeast quarter of section 34, the various channels and gravel bars of the Saskatchewan are intersected. On the northwest quarter of section 33, a pack trail is intersected leading from Brazeau

river to the wagon road following the Saskatchewan. The quality of soil in this range is similar to the preceding one and therefore rated third class.—*Louis E. Fontaine, D.L.S., 1904.*

Township 53 (west half).—The best route to reach this township is by the trail to Lake St. Ann and from thence to Isle lake. From the latter place I found it best to transport my baggage and provisions by pack horses. The trail is good and much used by hunters from the Rocky mountains. Pembina river enters the township in section 5, is very winding, flows in a general northeasterly direction, and leaves the township in section 34. The bed of the river is rocky, the water good and clear. On the banks are very fine spruce. Fish are scarce, but traces of bear, deer, wolves and foxes were seen. One of my men says he saw a black fox. The township is wooded with young elm and very fine spruce of tremendous size, especially near the river, where there are also rich coal deposits. The soil is sandy and not fit for cultivation except in sections 30 and 31. What makes this township valuable are the fine deposits of coal on the banks of the river and the fine quality of the spruce. These spruce will before long be sought after by lumbermen. Timber can easily be floated down Lobstick and Pembina rivers.—*C. E. Bourgault, D.L.S., 1904.*

Township 53.—The north branch of the road from Lake St. Ann to Jasper House passes through the north part of this township. Wagons can travel as far as the eastern boundary, but beyond it is only a pack trail. For the last six miles, we may say the last ten miles coming to Grays from the east, it has been used for wagons this summer for the first time, and some work would be required to get it in good condition. The soil is mostly a good coat of black loam over a clay subsoil well adapted for farming. The surface is rolling wherever it is not affected by the Pembina and Lobstick rivers, which form the principal topographical feature of the township. The valley of the Pembina is two hundred to two hundred and fifty feet deep and measures one-quarter to half a mile wide, and the banks are very steep in some places. The valley of the Lobstick is about one hundred to one hundred and fifty feet deep, but it generally slopes gradually on one side, although it is very often quite abrupt. There are, especially on the north third of the township, large spaces covered with small poplar easy to clear, with small open spaces covered only with scrub; but the country may be described as a heavy timbered country, interspersed here and there towards the south, with areas covered with small poplars, the big timber getting lighter the further we go north, although almost every section contains a good quantity of poplar averaging six to sixteen inches in diameter. Good spruce is also found along the river and the muskegs, especially on sections 2, 3, 10 and 11, also on sections 26 and 27. There are many spruce swamps which considerably reduce the farming area. Hay is found in a few sloughs, especially along the centre line on the east boundaries of 9 and 16, and also in the vicinity of Round lake. Water is good wherever found, but it was scarce in some parts this summer. The Pembina, which, as already said, is the main topographical feature of the township with the Lobstick, measures from two and one-half to three chains in width, with an average depth of from two to four feet at low water. The current averages four to seven miles an hour with many rapids. With the exception of the ends of points the river will not overflow its banks. There are no regular falls, but water powers could be developed by the building of dams. The bed is strewn with small boulders. Lobstick river is one to two chains wide, two feet deep and all that has been said of the Pembina applies also to it. The climate is the same as in Edmonton. There is plenty of wood for fuel, and coal is found along the Pembina, especially near the crossing of the north boundary of the township. There are no stone quarries, and I have remarked no minerals of any kind. Game does not appear to be plentiful.—*Geo. P. Roy, D.L.S., 1904.*

Township 54.—Pembina river is the principal feature of the township, into which it comes by crossing the south boundary of section 3, near the northwest corner of section 34, township 53, range 7, leaving it by crossing the east boundary of section 24 near the quarter section post. It averages three to five chains in width with a depth of two to four feet at low water, and a current of about five miles an hour. There are a number of rapids, but no regular falls. The valley is from one-half to three-quarters of a mile wide from top to top, and two hundred to two hundred and fifty feet deep. North of section 11 the banks recede and where the river leaves the township the ground on each side slopes gradually towards the river to a bank of ten to fifteen feet high. The general direction of the river is northeasterly. If dammed especially in the part running through section 3, where the banks are high and close a considerable water power could be developed, but the valley would be flooded for a long way back. The bank of the river is stony in most places. This township can be reached by the trail from Lake St. Ann to Jasper House. Wagons can come as far as Gray's store, on section 28, township 53, range 6, and even as far as the east boundary of the township, but from there it is only a pack trail. Two miles beyond Gray's it forks into two branches, one coming into the township near the eastern boundary of section 24, where the Pembina leaves it, the other continuing nearly due west, strikes the river about a quarter of a mile south of the south boundary of section 3, continuing in the same direction for a few miles more. The two branches re-unite again before reaching Jasper house. There is also another pack trail coming into the township near where Pembina river leaves it. It is a branch of the wagon trail from which it forks on section 14, township 54, range 5, but it is in bad condition on account of swamps, and is not much travelled. The soil is a good coat of black loam over a clay subsoil, and well adapted to farming. The valley of the Pembina breaks the surface of the country. All the part situated east of it is rough and hilly, except on section 24, where the ground is gently sloping towards the river. This side of the river is also thickly wooded for two miles from the south boundary, after which the bush gets lighter as you get near the river. The western part of the township is much better, except for the two miles along the meridian east of sections 4 and 9 where the country is broken by the valley of the river and by another deep valley crossing the east boundary of section 9. Along this meridian also the bush is heavy, and east of section 9 and 16, and also on the north boundary of section 10 we had to cut some of the largest trees (among them spruce) which we met this summer. Towards the west the country is rolling and the bush is much lighter. There are large spaces where land could be easily cleared in a short time. There is good fuel all over the township, but not many hay sloughs are found. The water is good. There are no water powers and nothing to produce them outside of Pembina river. The climate is the same as in Edmonton, but in the valley of the river it is much warmer than on the table land. When camped there in July the heat at night kept us from sleep more than once. Wood is the fuel most readily available, and it can be procured in any part of the township. A seam of coal about five feet deep runs for half a mile along the left bank of the Pembina, where it crosses the south boundary of section 3, and the men saw evidence of good coal along the north boundary of section 11. I have remarked no stone quarries nor minerals of any kind, and we saw very little game while we were there.—*Geo. P. Roy, D.L.S., 1904.*

Township 54 (west half).—This township is all wooded with small poplar, some scattered spruce and birch, willow and scrub. The surface may be classified as rolling, in some places very level. Several creeks of good water running into Pembina river, cross the township. It may happen that these creeks will be dry the greater part of the season, when all the timber has been cut. Settlers coming into this country will not be disappointed, as there is good water, a great quantity of timber suitable for log houses, and at the same time very good land composed of black loam and clay subsoil.

There are no hay marshes, but along the creek may be found enough hay to feed cattle during the winter. There is a pack trail very well opened from Lake St. Ann settlement to the Rocky mountains, crossing sections 20 and 19. There is no prairie. Settlers will be obliged to cut timber to erect their houses, so you may imagine the great work to clear a farm. Notwithstanding this, I will not be surprised to see settlers coming into this country. There is no coal in this part of the township, but four miles away on Pembina river there is coal enough for the wants of a big town like Montreal.—*C. E. Bourgault, D.L.S., 1904.*

Township 56 (north outline).—The east half of this range is covered with thick poplar bush of 5 inches diameter, the surface is broken. The remainder comprises an undulating area with small open patches and occasional small muskegs. On the northwest quarter of section 36 Pembina river flows in a northeasterly direction with a rate of current of 4 miles per hour and a depth of water of 4 feet. On the northwest quarter of section 34 the line intersects a good pack trail leading from Lake St. Ann to the junction of the Macleod and Athabaska rivers. The soil is similar to that of the preceding ranges and rated third class.—*L. E. Fontaine, D.L.S., 1904.*

Township 60 (north outline).—In this range the country is rolling and in the depressions are to be found muskegs and tamarac swamps. It is thickly wooded with poplar and spruce suitable for lumbering. On the northwest quarter of section 32, is intersected the east shore line of Athabaska river. Throughout the range the soil is of poor quality and rated third class.—*L. E. Fontaine, D.L.S., 1904.*

Township 72 (north outline).—Generally this range has a fair soil, a rolling to rough surface and is wooded with poplar, birch and spruce of fair size.—*Edgar Bray, D.L.S., 1904.*

Range 8.

Township 48 (north outline).—Across range 8 the line passes over an undulating surface over-run by fire and covered with fire killed standing timber and windfalls. Sections 31, 32, 33 and part of 34 comprises a level mossy muskeg. With the exception of sections 35 and 36 where the soil can be rated third class the remainder of the range is practically worthless.—*Louis E. Fontaine, D.L.S., 1904.*

Township 52 (north outline).—In the east half of range 8 the line passes over an undulating surface thickly covered with poplar and spruce of an average of 10 inches diameter. The remainder of the range is low and swampy with intervening small ridges of jackpine of small dimensions. The soil is rated third class throughout.—*Louis E. Fontaine, D.L.S., 1904.*

Township 56 (north outline).—Across range 8 the line runs over an undulating brulé country partly covered with a second growth of poplar and willow scrub. Paddle river meanders on the northeast quarter of section 35, in a northeasterly direction and empties into the Pembina. It has an average depth of two feet and a current of two miles per hour. In this range the soil is of better quality and rated first class and second class.—*Louis E. Fontaine, D.L.S., 1904.*

Township 72 (north outline).—Assineau river crosses the base line in section 33 in a deep valley, whereof the west slope is generally gradual, while that to the east is very rough. Elsewhere the range is composed of rolling land with mostly a good soil, and is thickly wooded with poplar, birch and spruce.—*Edgar Bray, D.L.S., 1904.*

Range 9.

Township 52 (north outline).—Across range 9 the surface is undulating and swampy. Most of it has been over-run by fire and only a few scattered small bluffs of green jackpine are to be found. The soil is of a poor quality and rated third class.—*Louis E. Fontaine, D.L.S., 1904.*

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Township 72 (north outline).—The land in sections 36, 35, 34 and 33 is generally rolling, has a good soil and is wooded with poplar, birch and spruce of fair size and quality. Section 32 is swampy and mostly covered with scrub. Section 31 is also scrubby, but is good land. Swan river, a stream of about 120 feet in width, variable depth and slow current crosses the line close to the western boundary of the range. Along the river we found beautiful prairies, mostly of small size, but rich soil and adapted for any kind of farming.—*Edgar Bray, D.L.S., 1904.*

Range 10.

Township 52 (north outline).—In this range the country assumes a rolling aspect. It is heavily timbered with poplar, spruce and jackpine varying from 10 to 18 inches in diameter. The soil is third class.—*Louis E. Fontaine, D.L.S., 1904.*

Township 72 (north outline).—Section 36 is mostly prairie (with some scrub) with a remarkably rich soil. Section 35 and part of 34 lies in a swamp of spruce and tamarac. Section 31 is about one-half swamp of the same description. Elsewhere the land is gently rolling with fair soil and is covered with woods of poplar, with some birch and spruce.—*Edgar Bray, D.L.S., 1904.*

Range 11.

Township 52 (north outline).—In this range the country assumes a rolling aspect. It is heavily timbered with poplar, spruce and jackpine varying from 10 to 18 inches in diameter. On the northwest quarter of section 35 the line intersects a pack trail leading from Lake St. Ann to Jasper House pass. The soil is third class.—*Louis E. Fontaine, D.L.S., 1904.*

Township 72 (north outline).—Mostly good rolling land with thick woods of poplar, birch and spruce.—*Edgar Bray, D.L.S., 1904.*

Range 12.

Township 52 (north outline).—In this range the line runs over an undulating surface, alternating between small ridges of green jackpine of six inches diameter and small muskegs and tamarac swamps. In this range there is a large quantity of waste land and what is left that is of any account is rated third class.—*Louis E. Fontaine, D.L.S., 1904.*

Township 72 (north outline).—Section 31 is in a spruce and tamarac swamp. Elsewhere the land is rolling, with woods of poplar, birch and spruce, and good soil.—*Edgar Bray, D.L.S., 1904.*

Range 13.

Township 72 (north outline).—Driftpile river, a stream of about 80 feet in width and variable depth and current, crosses the line near the western boundary of section 36, and here some unimportant openings were found. Generally, however, the land is of fair quality and is covered with woods of poplar, birch and spruce. The surface is mostly rolling, with a gradual rise from Driftpile river to the middle of section 32, where a considerable altitude is attained. This point is also the beginning of a descent to the west, which continues for nearly a mile.—*Edgar Bray, D.L.S., 1904.*

Range 14.

Township 72 (north outline).—Sections 36 and 35 are mostly rolling land, with good soil and heavy timber of poplar, spruce and birch. The remaining sections (with a few unimportant exceptions) are part of an extensive and wet swamp of spruce and tamarac and are of no present value.—*Edgar Bray, D.L.S., 1904.*

Range 15.

Township 72.—East Prairie river, a reported tributary of South Heart river, which empties into the west extremity of Lesser Slave lake, flows northerly through section 32 of this township. This stream is about fifty-five yards wide, with banks twelve feet high, with a stone or gravel bottom and an average current of three miles an hour. The hills on each side of the river are thirty-five feet high. This river is reported to join South Heart river at about six miles above its estuary. Along each bank of the river, there is a strip of poplar, six inches in diameter, with a heavy undergrowth of alders and willows. Excepting the east half of section 35, which has a rolling surface, covered with poplar and spruce averaging eight inches in diameter, the country adjoining the line is a continuous spruce and tamarac muskeg. The soil on the east side of the river is a fine grayish silt, four inches deep, overlying a sand and stone subsoil, whilst on the opposite side of the river, it is black loam eight inches deep with a sandy subsoil. There are some hay meadows north of the line in sections 5 and 6, township 73. A pack trail from Sucker creek, Indian reserve, runs near the northeast corner of section 35.—*Arthur Saint Cyr, D.L.S., 1904.*

Range 16.

Township 72.—Sections 35 and 36 are part of a large muskeg. The other sections which have a general slope to the north are thickly wooded with poplar, birch, spruce, balm of Gilead from six to twelve inches in diameter, and a thick underbrush of willows. The soil is a black or sandy loam four to eight inches deep over a sand or clay subsoil. A pack trail from Prairie river settlement to Snipe lake crosses the line near the middle of section 33. The divide between East Prairie river and West Prairie river occurs in section 31. Creeks running north cross the north boundary of this township in sections 31, 32, and 36.—*Arthur Saint Cyr, D.L.S., 1904.*

Range 17.

Township 72.—The surface of this township is undulating and timbered with poplar, birch, spruce, balm of Gilead, of eight inches in diameter. There are some extensive spruce muskegs, notably in sections 31, 32, 34, and 35 with intervening narrow strips of high land, well wooded. West Prairie river, coming from the southwest crosses the north boundary of this township near the corner of section 32. It is forty yards wide with banks fifteen feet high. It flows in a narrow valley bounded on the east by steep hills forty feet high, whilst those on the west side of the river are seventy-five feet high. There is a prairie flat along this river, where the line intersects it. This river is said to be another tributary of South Heart river, which it joins about fifteen miles above its mouth. The soil is a black or sandy loam six inches deep with a sand and stones or clay and stones subsoil.—*Arthur Saint Cyr, D.L.S., 1904.*

Range 18.

Township 72.—This township includes the northeastern slope of Hunters mountain, which is timbered with very large spruce averaging twenty-four inches in diameter. Spruce of thirty inches and thirty-six inches in diameter are not uncommon. The trees are sound, straight and clear of limbs to a height of forty feet or more. The other trees noticed are balsam firs (sapin), poplar, twelve to fifteen inches in diameter, birch, balm of Gilead and large cottonwoods. The underbrush in this forest is very dense, and in places the ground is covered with bad windfalls. The soil is generally a sandy loam, six inches deep, covering a subsoil of heavy clay. Nat-sho-e or Iroquois creek, which flows northwards into Iroquois lake and ultimately into Little Smoky river, crosses the line in section 36 as does also the winter trail from Prairie river settlement to Sturgeon lake. There are a few small patches of prairie land along this creek. The divide between West Prairie river and Snipe creek is in section 31.—*Arthur Saint Cyr, D.L.S., 1904.*

Range 19.

Township 72.—A thick forest of spruce of two feet in diameter, balsam firs (sapin), birch, balm of Gilead, and large cottonwood, covers this township, whose surface is rolling and sloping towards the northwest. Section 35 is covered with impassable windfalls. Good sized creeks flow through every section along the line and go to feed Stony creek, which winds along the west edge of Hunters mountain and crosses the line at the northeast corner of section 34. The ground is stony in places on the surface and the soil is light, being a sandy loam from six to ten inches deep with a heavy clay and stone subsoil.—*Arthur Saint Cyr, D.L.S., 1904.*

Range 20.

Township 72.—Little Smoky river, which is the principal tributary of Big Smoky river, enters this township near the northeast corner of section 35. It is 140 yards wide, has a stony bottom, a swift current and banks fifteen feet high. Its valley proper is less than two miles wide and is bounded by hills 130 feet high. In sections 35 and 36, the country is rolling and covered with young poplar whilst in the other sections it is either level or undulating and thickly wooded with birch, poplar and spruce bluffs, alternating with patches of willows and alders. Along the river soil for one mile and a half west of it, is a heavy clay changing to a sandy loam four to eight inches deep over a clay subsoil in sections 31 and 32. Snipe creek, which is the outlet of Snipe lake, a body of water five and a half miles long and lying in ranges 18 and 19, township 71, crosses the north boundary of section 36. It winds along the foot of high hills and joins Little Smoky river about half a mile north of the line. The wagon road from Lesser Slave lake to Sturgeon lake crosses the middle of section 35. *Arthur Saint Cyr, D.L.S., 1904.*

Range 21.

Township 72.—The surface of this township is nearly level and covered with spruce, birch and poplar woods. The timber range from six to eight inches in diameter. There is a spruce muskeg in section 35 and a larger one, which starts north of section 34, extends westerly through sections 33, 32 and part of 31. Creeks flowing south cross the north boundary of section 35. The old pack trail from Lesser Slave lake to Sturgeon lake intersects section 31. It follows along a stream flowing north

towards Little Smoky river. The soil is very good in the vicinity of this trail and creek, being a black loam ten inches deep with a clay subsoil. Through the other sections, the soil is a black or a sandy loam three to ten inches deep overlying a clay subsoil.—*Arthur Saint Cyr, D.L.S., 1904.*

Range 22.

Part Township 28.—The survey of the above township lay along the Canadian Pacific railway in the neighbourhood of Moberly, B.C. It consisted in extending the original survey. The part lying between the Canadian Pacific railway and the Columbia river is low and nearly level. Most of it is occupied by a swamp meadow, which is boggy in places. When the water in the Columbia is high this swamp is covered with water; in consequence it is practically useless. It might be reclaimed by placing a dyke along the river but it is a question if the land warrants such an outlay. If a large open ditch was placed through the middle of the meadow, a considerable part of it could be made use of. On the opposite side of the railway the country is hilly with occasional benches. The timber has been almost completely burnt off. *Jos. E. Ross, D.L.S., 1904.*

Township 72.—This township is covered with impassable windfalls and its surface, which is rolling or undulating, is stony in places. Two muskegs extend across section 35. Spruce timber is found only in small patches in the brulé, which is overgrown with small poplar and thick willow scrub. Creeks of good water, flowing northeasterly towards Little Smoky river, run through sections 36, 33, 32 and 31. Along one stream and its branches, running through section 36, is a strip of prairie land half a mile wide. The soil is a black loam fifteen inches deep with a clay subsoil. In places this prairie is dotted with willow clumps. This creek receives from the west a tributary, the outlet of a lake half a mile long and lying one quarter of a mile north of section 35. In sections 31, 32, 33, 34 and 35 the soil is a heavy clay.—*Arthur Saint Cyr, D.L.S., 1904.*

Range 23.

Township 68.—This township is tolerably level, and the land is stony in places. It is covered with young poplar, balm of Gilead and thick willow scrub. There is a large muskeg in section 32 and another one in section 34. A well travelled pack trail from Sturgeon lake to Little Smoky river enters this township near its northeast corner. The soil is a sandy loam two to six inches deep or a black loam in places fifteen inches deep with a heavy clay or sandy subsoil. Spruce timber of small dimensions is found in the muskegs. Small creeks, tributaries to Little Smoky river, cross this line in sections 35 and 36. The height of land (2,300 feet above sea level), between the basins of the Simmonette and Little Smoky river, occurs near the northeast corner of section 31.—*Arthur Saint Cyr, D.L.S., 1904.*

Township 72.—The north boundary of this township runs over a mountain timbered with spruce from ten to twenty-four inches in diameter, some attaining a diameter of thirty-six inches, jackpine, poplar, balsam fir and birch. The highest point, 2,700 feet above the sea, reached, is at the northeast corner of section 33. The land is well irrigated by several creeks of good water flowing in deep ravines. The largest one of these streams is called Wabatonish (white earth), by the Cree Indians, and is a tributary of Little Smoky river. There are some bad windfalls overgrown with small poplar in section 36, and north of sections 34 and 35. Two pack trails leading to Sturgeon lake join in section 19, after crossing the north boundaries of sections 31 and 32. The soil is clay.—*Arthur Saint Cyr, D.L.S., 1904.*

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Range 24.

Township 68.—Level country covered with willow scrub, small spruce, birch, poplar and balm of Gilead. A large spruce muskeg extends across section 31, and the west half of 32. Another large muskeg takes up the east half of section 34, and the west half of 35. In these muskegs the timber is scraggy and small. Two pack trails from Sturgeon lake run through section 35 in close proximity to each other, and another one through the middle of section 36. The soil is generally a black or sandy loam four to eight inches over a clay or sand and stone subsoil. In places the soil is gravel.—*Arthur Saint Cyr, D.L.S., 1904.*

Township 72.—Undulating country wooded with poplar and spruce from 6 to 12 inches in diameter. The height of land between the basin of the Big Smoky river and those of Sturgeon lake and Little Smoky river crosses the north boundary of section 36. Amongst the many streams which flow through this township, the most important is Puskwaskow river, the outlet of the Puskwaskow (Marcageux) lake, lying in section 32. It is a tributary to Big Smoky river. There are hay meadows in sections 32, 34 and 35, and a large spruce muskeg covers the west half of section 32 and nearly the whole of 31. The soil is a sandy loam 3 to 4 inches deep with a subsoil of clay.—*A. Saint Cyr, D.L.S., 1904.*

Range 25.

Township 72.—The forest extends westerly through this township as far as the middle of section 32 where the brulé and windfalls begin. The surface of this township is nearly level and is well drained by several large creeks, feeders to Puskwaskow river. The soil is a black loam 3 to 10 inches in depth overlying a subsoil of clay, or clay and stones. The timber is mostly spruce, poplar, cottonwood and birch 6 to 15 inches in diameter.—*Arthur Saint Cyr, D.L.S., 1904.*

Township 68.—The western half of this township is rolling and lightly covered with willow scrub and bluffs of small poplar and birch whilst the eastern half is level. The land is stony on the surface and there are many hay meadows. A pack trail from Sturgeon lake to Simmonette river crosses the north boundary of this township at the northeast corner of section 35. Creeks, giving an ample supply of good water and flowing southerly towards Simmonette river, intersect this line in every section. The soil is a sandy loam four to twelve inches deep, with a subsoil of clay or clay and stones. At about half a mile north of the line, there is a range of low hills with a large meadow extending along their south base. This would be a good ranching country.—*Arthur Saint Cyr, D.L.S., 1904.*

Township 77 (outlines).—The country along the base line is swampy for the first three miles and of a rolling sandy nature for the next two. The last mile of the base line and the first five miles of the eastern boundary are the usual poplar and spruce country. The last mile of the east boundary and the whole north boundary is through a net work of open marshes interspersed with some belts of very good land rather heavily timbered.—*C. C. Fairchild, D.L.S., 1902.*

Township 78 (part).—The south two-thirds of this township is very marshy for a great part and Coot lake is little more than a great marsh. The township is heavily timbered in the north part, while the south part is heavy in places and light in others. The country adjoining the east and south sides of Coot lake is full of marshes of varying size and practically grades No. 4 as for settlement. The pack trail from Lesser Slave lake to Spirit river crosses this township running north of Coot lake. The soil is excellent when not marshy and in some of the dry marshes hay was seen six feet in height.—*C. C. Fairchild, D.L.S., 1902.*

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Township 79 (south and east outlines).—The country is generally heavily timbered, soil good and generally dry.—*C. C. Fairchild, D.L.S., 1902.*

Township 80.—As only the boundaries and the northern one-third of this township was surveyed, the report is confined to that part of the township. North of Peace river the country is generally rolling prairie with enough timber on some sections to provide for the requirements of the prairie parts. On the margin of the river and extending back in places for a mile or more is a block of as fine farming land as can be found in the Northwest Territories. These lands are partially prairie and the soil excellent. The surface is generally level and a fringe of good timber skirts the river. On the south side of the river, with the exception of the prairie running down to the river shown on plan, is found heavy timber covering both side, hill and valley. The valley when cleared will make excellent farming land, and timber enough can be had for all requirements. A considerable sprinkling of spruce is found throughout the other timber, but not in quantities to recommend its being reserved. On the islands, or rather what are islands in high water, large spruce grows in such quantities that I would recommend its reservation. The 21st base line in its fifth mile along the north side of range 25 reaches the summit of the banks of Peace river which I estimated at nine hundred above the river. On this plateau the land is excellent, and not so heavily timbered as the south flat of the river. Numerous small hay marshes abound on this level plateau, but I am informed by the Indians and others that these are practically all dry except in a wet season such as 1901. In fact great difficulty is met in finding water by hunters here except in the river, Egg lake and two or three creeks found between. This township, like the one to the west, is very difficult to approach, except by boat or saddle horse and this objection applies to the whole of the country between the 20th and 21st base lines.—*C. C. Fairchild, D.L.S., 1901.*

Range 26.

Township 68.—Simmonette river flows northwards through this township and crosses its north boundary in section 33; on both sides of the river are steep hills, 175 feet high. At some distance from the river, the ground is undulating, whilst in its immediate vicinity, its surface is rough and furrowed by deep ravines. Belts of large timber, spruce which has been spared by fire, were noticed in the flats along the river. On the high lands one hundred and seventy-feet above the river, some green timber is also found in bluffs separated by large tracts of fire-killed timber. Sections 35 and 36 are pretty open, with patches of willow and scrub poplar here and there. The soil is very good, being a black or sandy loam eight to ten inches deep over a clay subsoil. Near the river the subsoil is generally sand or stone and gravel. The eastern half of this township is sufficiently open, and there is enough wild hay growing to render it fit for ranching. There are a few small swamps and muskegs in the township.—*Arthur Saint Cyr, D.L.S., 1904.*

Frac. township 72.—Running diagonally from the northwest to the southeast across this township is a wide depression following the foot of Mt. des Salines on section 34. With the exception of patches of green timber in sections 21, 27 and 34, nearly all the timber is fire-killed and is either standing or strewn thickly over the ground. The divide between the Simmonette and Puskwaskow rivers is in section 35. There is a lake in sections 16 and 17, a large marsh in sections 20, and some hay meadows in section 31. Creeks flowing north across the north boundary of section 36, whilst those crossing sections 33, 34 and 35 flow southerly towards the Simmonette. The soil, in the east half of this township, is a sandy loam 5 to 10 inches deep over a subsoil of clay; in the other half, the loam is only 4 inches deep

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with a clayey or sandy subsoil. The land is stony on the surface in the vicinity of Mt. des Saïnes.—*Arthur Saint Cyr, D.L.S., 1904.*

Township 77.—This township may be divided generally into two parts for agricultural purposes, viz.:—(1) North of Birch hills, (2) South of Birch hills. That part lying north of Birch hills slopes gradually to the north from the crest of the hill and contains some excellent farming land when not too heavily timbered. The northwest corner is the best part of the township. The eastern portion of the north half is more heavily timbered chiefly with poplar and interspersed with small marshes. This may be said to be the case with the eastern part of the south half as well, except that the timber is larger with a greater proportion of spruce, and marshes are more frequent and larger. The southwestern portion consists for a great part of a series of connected swamps and marshes, the only valuable feature being a considerable extent of large poplar, spruce, tamarac and jackpine timber. Birch hills extend only about one mile east of the sixth meridian; the east and south sides of the range are very steep and broken, while the north slope, as before mentioned, is, for the greater part, a steady decline.—*C. C. Fairchild, D.L.S., 1902.*

Township 78.—The surface of this township is generally slightly undulating and covered with a growth of poplar and spruce of varying size. A considerable portion of the surface is covered with a thick undergrowth of willows and a large marsh in the centre of the township detracts considerably from its value. The soil is excellent when dry, but it is rated as No. 2 only on account of the timber growth. The creeks shewn on the lines all run dry in the summer. The trail from Lesser Slave lake to Spirit river settlement passes through the southern part of the township. *C. C. Fairchild, D.L.S., 1902.*

Township 79.—This township has more prairie and is better drained than any of the others examined by me on the south side of Peace river. Fox creek, a never failing stream of good water, runs from east to west across the township, and a branch runs from the southwest angle of the township in a northeasterly direction to join the main stream. This branch, however, dries up in the summer. A greater part of the land lying on either bank of these creeks is prairie broken with bluffs of small poplar and willow. The soil is excellent, generally well drained, and, but for the timber, which increases in size as you get farther from the creek, would be No. 1 for agricultural or grazing purposes. Some small marshes are found in the north end of the township and strange to relate, though the north limit runs at the west side within one mile of Peace river the drainage is all towards Fox creek. The ravine through which the creek runs is only about twenty-five feet deep at the east boundary, and increases to one hundred or more at the west boundary, where both banks are more or less heavily timbered.—*C. C. Fairchild, D.L.S., 1902.*

Township 80.—On July 26 I started the survey of this township. The greatest difficulty in the survey was the crossing of the various marshes, many of which had three feet of water in them at the end of July, which were practically dry by the middle of September. The township lies almost wholly in the valley of Peace river, i.e., between the tops of the high banks. The soil is first class clay loam and black loam, but a great portion of the surface is so broken that it would be practically useless for grain farming, but would do for grazing. There is plenty of timber for wood and building on the township, although a portion north of the river has little besides small poplar scrub. The growth during the summer of 1901 was almost tropical. The pea vine and grass reaching a height of six feet in places. Saskatoon and raspberry bushes are plentiful in many places, and the yield for the season was very prolific. Horses run wild over the district north of the river and have not the slightest difficulty in wintering without feed. The township is approachable, however, only by boat or saddle horse. The deep gullies found by the tributary creeks making road building almost an impossibility. The creeks shown on plan and in notes required

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to be bridged to cross my pack trains, while in September no water was running in any of them. The greater part of the township north of Peace river has been burnt over in past years, while the south bank is as yet untouched. Peace river was so flooded that I found it impossible to swim my horses, and I was forced to transfer them in a boat, but by the time the traverse of the river was made it had fallen to normal low water. Some excellent flat lands mostly on the south side of the river would make splendid farms. These lands hemmed in by surrounding hills like the settlement at the south of Smoky river, are among the finest I have ever seen.—*C. C. Fairchild, D.L.S., 1901.*

Range 27.

Township 68.—This is a fractional township adjoining the sixth initial meridian, which intersects its north boundary at 28·89 chains west of the northeast corner of section 35. Moose river, a tributary of Simmonette river, flows northerly through this township, crossing its north boundary near the middle of section 36. Over this part of the country are deep ravines leading to the river and all the land is covered with bad windfalls. The soil is a sandy loam six inches deep over a sandy subsoil near the river, or a clay subsoil on the high lands.—*Arthur Saint Cyr, D.L.S., 1904.*

TOWNSHIPS WEST OF THE SIXTH MERIDIAN.

Range 1.

Township 65.—In the north half of this township, which has a rolling surface, the fire has destroyed all the timber in what was once a magnificent forest. The other half is very hilly, but the ridges are covered with dense woods of jackpine three inches to fifteen inches in diameter, poplar, balsam fir (savin) and spruce in the intervening muskegs. The general slope of the land is towards the west, where the valley of Moose river can easily be identified by its steep hills and cut banks. A well travelled pack trail, reported to be a branch of Lake St. Ann trail, runs through section 1. Amongst the many streams which flow through this township, one, called Cache creek, is thirty links wide. It flows westerly, crossing the line at right angles near the northeast corner of section 1. The soil is light, being sand and gravel or a fine grayish silt over a hard clay subsoil. The south half of section 12 is swampy.—*Arthur Saint Cyr, D.L.S., 1904.*

Township 66.—The surface of this township is undulating and the land is irrigated by several creeks, tributaries to a good sized stream which flows in a northeasterly direction and crosses the line at a sharp angle near the middle of section 13. This stream empties into 'Lac des Petits Poissons,' which is reported to be one mile and a-half long and to lie two miles east of section 36. This lake empties Simmonette river, distant about five miles from it. There are some patches of green timber still left in this township. These are surrounded by large areas of fire-killed trees which are either standing or lying in an inextricable maze over the ground. From the middle of section 13, the ground rises gradually till an altitude of 3,175 feet is reached in section 1. This may be taken as the average altitude of the country above the level of the sea. The Rocky mountains are now in full view to the southwest with their snow-capped peaks glittering in the sun. A pack trail from Lac des Petits Poissons crosses the middle of section 36. Soil is a clay loam with a clay or clay and stones subsoil.—*Arthur Saint Cyr, D.L.S., 1904.*

Township 67.—Rolling country sloping towards Moose river, which flows northwards across the middle of this township. From section 36 the ground along the line

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risers gradually towards the south till in section 12 the highest point (2,800 feet above sea level) is obtained. In sections 1, 25, 36 and in the north half of section 24, nearly all the timber has been fire-killed, but the remaining sections along the line are well timbered with spruce, twelve inches to thirty inches in diameter, jackpine ten inches to twenty inches straight and free of limbs for over forty feet, balsam fir (sapin) twelve inches to twenty-four inches. Several creeks, giving an ample supply of good water, cross the line in their course towards Moose river. The soil is a black or sandy loam three inches to twelve inches deep overlying a subsoil of sand, or sand and clay, or clay and stones. Through this township there are considerable areas of thick windfalls. A pack trail from Sturgeon lake crosses the line in section 25.—*Arthur Saint Cyr, D.L.S., 1904.*

Township 68.—Moose river flows from the west, crosses the eastern boundary in the southeast part of section 24, thence flowing north, crossing and recrossing the boundary in section 25. The river is about fifty yards wide, the valley is about half a mile wide between the crest of the hills which are from one hundred and fifty to one hundred and seventy-five feet in height. The hills are much broken by ravines. The timber is fire-killed, much of it lying on the ground. Soil, black sandy loam, six inches to eighteen inches deep, subsoil clay. South of the river to the southern boundary of the township, is a dense forest of spruce, twelve inches to twenty-four inches in diameter, poplar ten inches, birch eight inches, with heavy undergrowth of alders and willows. The country is level. The aneroid shows 2,000 feet to be the general elevation of the country above sea level.—*Arthur Saint Cyr, D.L.S., 1904.*

Township 69.—For the last time Simmonette river crosses the sixth meridian near the northeast corner of section 12. Less than half a mile west of that point, it receives a tributary, called the Moose river. This very tortuous stream crosses the line twice in section 36, and four times in section 25; it is about sixty-five yards wide, has a swift current, a stony or gravelly bottom and banks fifteen feet high. The hills on each side of the river are one hundred and seventy-five feet high, and in places end in steep cut banks reaching to the water's edge. The surface of the north half of this township is level and swampy. It is old brulé overgrown with young poplar and willows. There is a belt of spruce, tamarac, poplar and birch in section 24. Through the south half of this township run deep ravines leading to Simmonette and Moose rivers. A few strips of good spruce ten inches to twenty inches in diameter were noticed along both streams. A pack trail runs through section 13. The soil is loam, two inches to eight inches deep with a clay or sand and clay subsoil.—*Arthur Saint Cyr, D.L.S., 1904.*

Township 70.—Simmonette river crosses the east boundary of this township three times in sections 36 and 25. Between the river and the foot of the steep hills which bound its valley are some flats where narrow belts of good timber (spruce twelve to thirty inches in diameter) and large cottonwood were noticed. South of the Simmonette, the surface of this township is generally level and covered with small poplar and willows in belts and clumps, with spruce and tamarac swamps and hay meadows intervening between the belts of small poplar. As usual, the land is thickly covered with impassable windfalls piled several feet high. The soil is a loam four inches to ten inches deep with a sandy subsoil in the sections adjoining the river, and a clay or sand and clay subsoil in the others. A pack trail crosses this line not far from the northeast corner of the township. In section 25, there is a large hay flat at about half a mile west of the sixth meridian and close to the right bank of the river. The sections adjoining the river are much broken by deep ravines.—*Arthur Saint Cyr, D.L.S., 1904.*

Township 71.—Simmonette river, a large tributary of Big Smoky river, crosses the east boundary of this township, three-quarters of a mile south of the northeast corner of section 1. At the crossing on the line Simmonette river is one hundred yards wide, with a swift current. Its banks are about ten feet high and its valley,

three-quarters of a mile wide, is enclosed between rough hills one hundred and seventy feet high. Extensive mud slides occur on both sides of the valley. After crossing the line, the river is reported to flow nearly due west to the Big Smoky and during the winter becomes part of the winter trail from Sturgeon lake to Grande Prairie. In this township also nearly all the best timber has been destroyed by fire, and though many dry trees are left standing, many more are lying over the ground in bad windfalls. A belt of good timber spruce twelve inches to twenty inches in diameter is, however, found between an old channel of the Simmonette and the river proper in section 1. Section 13 is very hilly. A large muskeg extends across section 24 and numerous creeks irrigate this part of the country. The soil is a loam four inches to eight inches deep overlying a clay subsoil though in some places the subsoil is a grayish fine silt of the kind noticed in township 75, south of Big Smoky river. Large lumps of drift coal were found along the banks of the river and indications of coal were noticed at many places in the mud slides. The country is hilly in the vicinity of the river. *Arthur Saint Cyr, D.L.S., 1904.*

Township 72.—Rolling country sloping towards the west and southwest and covered with bad windfalls, overgrown with thick poplar—many fire-killed trees still standing, the remains of what was a few years ago a fine forest. There were still some patches or bluffs of green timber surrounded by willow swamps or muskegs. An Indian trail runs through section 13. The soil in sections 1, 12, 13, 25 and 36 is a loam four inches to twelve inches deep with clay subsoil. In section 24 it is hard clay. Drift lignite in considerable quantity was found in the bed of a small stream flowing through the middle of section 13. *Arthur Saint Cyr., D.L.S., 1904.*

Township 73.—The surface of this township is undulating. All the timber in this part of the country was destroyed by fire about eight years ago, with the result that the land is at present thickly strewn with bad windfalls and brûlé overgrown with small poplar and thick willow scrub. From the middle of section 36, the sixth meridian follows the western slope of a range of hills extending southwards. The soil is very good, being a loam six inches to twelve inches deep with a clay, or sand and clay, subsoil. Another range of high hills is seen eight or ten miles to the east.—*Arthur Saint Cyr, D.L.S., 1904.*

Township 74.—Puskwaskow (Grassy) creek, a tributary of Big Smoky river, enters this township at the northeast corner of section 24. It is about half a chain wide and furnishes a good supply of water. It flows out of Puskwaskow (Grassy) lake one mile and three-quarters long and one-half mile wide. Large quantities of good hay (red top) could be procured from the vicinity of this lake. This township is wooded with spruce, jackpine, poplar from six inches to fifteen inches in diameter and birch with dense underbrush of willow scrub and alders. In section 1 the land is flat and swampy, whilst section 25 is much broken by ravines. The soil is a black loam three inches to six inches deep with a clay subsoil. The regular pack trail from Sturgeon lake to Birch hills and Ghost river crosses the east boundary of the township in section 13.—*Arthur Saint Cyr, D.L.S., 1904.*

Township 75.—The east boundary of this township runs through an undulating and wooded country irrigated by numerous small creeks. The timber is chiefly poplar from ten inches to fifteen inches in diameter, spruce six inches to ten inches and birch mixed with a heavy underbrush of alders and willow scrub. A pack trail crosses this line in section 13; and small creeks in sections 13, 24 and 36. In sections 13, 24, 25 and 36, the soil is fine grayish silt from four inches to fifteen inches deep with hard clay for a subsoil. In sections 1 and 12, the soil improves, being a loam six inches deep overlying hard clay.—*Arthur Saint Cyr, D.L.S., 1904.*

Township 76.—Big Smoky river, an important tributary of Peace river, flows through this township from west to east, crossing the east boundary at a quarter of a mile north of the northeast corner of section 12. It is at that point a quarter of a

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mile wide, has a current of four miles an hour and banks twenty feet high. Its bed is stony and gravelly. The hills facing the river from the north side are five hundred feet high, whilst those on the south side are less than two hundred and fifty. The width of its trough-like valley, measured between the crests of the hills on both sides, is almost three-quarters of a mile. North of the river the country is rolling and heavily timbered with spruce 10 to 15 inches, poplar of the same dimensions and birch. It is also much broken by ravines in section 25, through which runs a creek of good water. The country south of the river is also timbered, but more level. Creeks of good water cross the east boundary of this township in sections 1, 12, 24 and 25. A tamarac and spruce swamp, with trees about 6 inches in diameter, fifty chains wide, extends across the line and lies partly in sections 36 and 25. The soil in the sections north of Big Smoky river is generally a black or sandy loam 4 inches to 15 inches deep with a clay subsoil, which in those south of the river changes to a fine grayish silt 4 inches to 15 inches deep overlying hard clay.—*Arthur Saint Cyr, D.L.S., 1904.*

Township 85 (east outline).—This line is entirely on the southerly slope of a range of hills separating the watershed of the Whitemud river from that of Burnt creek. The south three miles have been burnt over, leaving scarcely any timber except small poplar and willow; there are several small watercourses rising in the hills to the northwest which have gradually worn out deep ravines and coulées towards the southwest down to the watershed; the northern three miles lies in more broken country with a thick growth of spruce and poplar and some birch. The soil is not deep, ranging from 3 to 12 inches of loam on clay subsoil. The height of land is about half way in the south half of section 1, township 86, range 1; from this point a view can be had along the meridian over the Whitemud river valley to a point about 1½ miles south of the northern corner of township 88, range 1.—*Henry W. Selby, D.L.S., 1904.*

Township 86 (east outline).—Descends gradually to the creek entering Whitemud river a short distance east of the northeast corner of township 86, and while it does descend it rises and falls over rolling ground between watercourses trending northeasterly from the height of land. The timber is mainly small poplar and scattered spruce of good size, while the soil improves from the height of land to the river.—*Henry W. Selby, D.L.S., 1904.*

Township 87 (east outline).—Whitemud river is crossed in section 12 along which there are small areas of prairie to the west, increasing in size to the east; the timber is chiefly small poplar with a few small spruce belts on dry muskeg and here and there burnt slash areas between the gently rolling ridges gradually ascending to the north. Soil continues loam with a clay subsoil except in the depressions where the muskeg is from 10 to 18 inches deep on clay.—*Henry W. Selby, D.L.S., 1904.*

Township 88 (north outline).—The land along the north boundary of sections 36 and 35 of this range is rolling, the drainage is to the northeast. A range of hills from 200 to 300 feet high extends in a southeasterly and northwesterly direction crossing the base line in section 34, beyond this the drainage is to the south. In sections 36 and 35, township 88, and sections 1 and 2, township 89, is a belt of heavy green timber, principally spruce and poplar; sections 34 and 33 township 88, and sections 3 and 4, township 89, are covered with a burnt slash. The soil in sections 36 and 35, township 88 and sections 1 and 2, township 89, consists of loam on a clay subsoil. In sections 34 and 33, township 88, and sections 3 and 4, township 89, the loam has been practically all burned, leaving only clay.—*Henry W. Selby, D.L.S., 1904.*

Township 88 (east outline).—The east boundary of this township gradually rises to the north until in section 25 the height of land is reached and a descent of 200 feet brings us to the northeast corner of section 36. The timber on sections 1 and 2 is mixed spruce and tamarac, and a few poplars of little value, the balance of the

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line runs through a thick burnt spruce slash, which on section 36 is thick slash and windfall almost impassable.—*Henry W. Selby, D.L.S., 1904.*

Range 2.

Township 83 (north outline).—This line, as far as it has been run, lies entirely in muskeg, which in summer is very wet, but which was frozen at the time of the survey, the timber is very small scattered spruce and tamarac. To the north of the line in sections 6, 5 and 4, township 84, range 2, it is a burnt slash. In sections 31 and 32, township 83, range 2, is a small lake.—*Henry W. Selby, D.L.S., 1904.*

Range 3.

Township 83 (north outline).—The land adjoining this line is also gently rolling, muskegs are also numerous; the timber is small poplar, spruce and willow. Muddy creek crosses the north boundary of section 33.—*Henry W. Selby, D.L.S., 1904.*

Township 83 (east outline).—The character of the country adjoining this land is similar to that of township 84; muskegs continue to be very numerous. The timber in sections 31, 30 and 19, township 83, range 2, and in sections 36, 25 and 24, township 83, range 3, is similar to that in township 84, that is to say, small spruce, tamarac and poplar, but in section 18, township 83, range 2, and in section 13, township 83, range 3, a belt of heavy spruce, poplar and tamarac is found extending in an east and west direction; this extends south into section 7, township 33, range 2 and section 12, township 83, range 3; the soil is principally clay.—*Henry W. Selby, D.L.S., 1904.*

Township 84 (east outline).—The land adjoining the east boundary of this township may be described as gently rolling, the timber is mostly small, though a small quantity of spruce, poplar and tamarac from 12 to 20 inches in diameter is to be found in section 30, township 84, range 2, and section 25, township 84, range 3. A number of muskegs covered with small spruce, tamarac and willows are to be found. Muddy creek crosses the east boundary of section 24, flowing in a southeasterly direction, a few prairie spots covered with a luxuriant growth of grass are to be found along the creek; the soil is mostly loam on a clay subsoil.—*Henry W. Selby, D.L.S., 1904.*

Range 6.

Township 80 (north outline).—The east boundary of this township falls in the easterly limit of a belt of large timber consisting of poplar and balm of Gilead thickly interspersed with small poplar and willow, which continues westerly to the top of the bank of Peace river valley in section 36, the timber extends southerly forming a fringe to the valley and northerly about 3 miles. The bank of Peace river on the 21st base line, is 810 feet above the water of the river, and is indented with ravines, landslides and washouts, which are continually changing their position, this sliding or change of position is due to the presence of alkaline clay in layers, upon which the upper layers keep moving upon receiving pressure from any direction. The first two miles west of the river is through large spruce, poplar and birch, and growth of willow; this extends for several miles both north and south of the line. The soil is chiefly leaf mould on clay. Section 33 appears to be a basin, dry this year, except for one or two sloughs, which may be considered as on the height of land and draining in a northeasterly direction. In section 32 ravines are found which empty into

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Bear creek at a depth of 700 feet below the surface of the country; very heavy poplar and spruce is found here on both sides of the line and extending westerly to the west slope of the ravine in section 31. Fire has evidently destroyed the timber on the west slope, and only thick scrub, poplar and willow is found.—*Henry W. Selby, D.L.S., 1904.*

Range 7.

Township 80 (north outline).—This range is mainly scrub, poplar and willow growing up in burnt slash and fallen timber. Bear Creek coulée is met with in sections 34 and 35 and is from 600 to 700 feet deep. Very little water was flowing in this coulée this season. The soil is chiefly loam on clay and gumbo. This coulée runs easterly from near the northwest angle of township 80, range 7, and nearly parallel to the base line to section 35 and thence northerly about $1\frac{1}{2}$ miles and thence northeasterly into Peace river, township 81, ranges 6 and 7 being very much cut up by it and its many ravines or arms.—*Henry W. Selby, D.L.S., 1904.*

Range 8.

Township 21.—I made a survey of parts of sections 17, 18 and 20, township 21, range 8, west of the sixth meridian, sufficient to cover the land required for mill purposes on the shore of Shuswap lake. The site is a very suitable one for a mill, being convenient to the Canadian Pacific railway and the waters of Shuswap lake, and lying in a crescent shaped bay is sheltered from the wind. It is a level strip about a mile in length and a few chains in depth from the water's edge. There are a small shingle mill, several dwelling houses and offices at present on the land. There are several small streams but none suitable for water power. The land in sections surveyed is thickly wooded with small timber. The land rises to about five hundred feet in twenty chains from the water. There is a little bench of land that might be used for gardening. In general, the land along Shuswap lake is steep and rocky and not suitable for agricultural purposes. In order to determine the position of sections surveyed, a traverse had to be made from the quarter post on north boundary, section 27, township 21, range 8, west of the sixth meridian.—*Jos. E. Ross, D.L.S., 1904.*

Township 80 (north outline).—The timber and soil is similar to that in range 7, with the addition of heavier fallen timber partly burnt. Bear creek coulée is crossed in section 35, 34 and east half of 33 and is about 600 feet deep; the valley is all full of landslides and the timber is lying down in all directions piled ten feet in places. The line crosses an alkaline and iron bog in section 34 which may have some value. Another ravine crossed the line near the centre of section 31, which falls into Bear creek coulee. Vegetation is very good.—*Henry W. Selby, D.L.S., 1904.*

Range 9.

Township 80 (north outline).—The timber and soil is similar to that in range 8 with a rank growth of vegetation. The line crosses a ravine, an arm of Bear Creek coulée in section 35 and it crosses Bear Creek coulée in section 33 where there are a few good sized cottonwood trees and spruce, here we also found some good water which had been very scarce all along the line.—*Henry W. Selby, D.L.S., 1904.*

Range 10.

Township 80 (north outline).—The timber is mainly spruce, poplar and cottonwood in quite large belts amongst which the fire has burnt deep bays, leaving the timber lying in all directions and now growing up with poplar, willow and rank grass;

the soil is similar to that in ranges 8 and 9, and in ordinary years would have a good deal of water lying on it on account of the gumbo and hard pan not letting it through. The watershed or height of land crosses the line west of the northwest corner of range 10 and extends northeast and southwest, a ravine falls northerly across the line in section 35 and there is a sharp descent to the west in section 31. On section 32 there is a large belt of good sized birch timber not met with elsewhere.—*Henry W. Selby, D.L.S., 1904.*

Range 11.

Township 80 (north outline).—Timber continues as in range 10 to be large and healthy looking, through sections 36, 35 and 34 in bluffs with dense willow flats between, in which the scrub is so tangled and matted together that it has to be pulled out of the way when being cut. Descent of drainage is to the northwest several small watercourses rising in ravines to the southeast and flowing through a large area of burnt and fallen timber; soil same as last range and vegetation very rank. Very little can be said of the country away from the line as the willows are so thick that travelling is almost out of the question off the line.—*Henry W. Selby, D.L.S., 1904.*

Range 12.

Township 80 (north outline).—This range seems to improve in soil while the timber is smaller and the large trees are very much scattered except in sections 34, 33, 32 and 31 where deep gullies occur in which the timber is of larger and better quality.—*Henry W. Selby, D.L.S., 1904.*

Range 13.

Township 80 (north outline).—Bear creek is crossed in section 36, 810 feet below the general level of the land, and is at present a very small stream, but the banks show that at times there is a deep and wide body of water flowing therein, also along the cut banks there are narrow seams of soft coal outcropping. The timber is of very little commercial value, there being only a few spruce of any size. Section 35 is on the bank of Bear creek and partly cut by it and very much so by ravines and landslides, and the timber is of no value except for firewood. Section 34 is gently undulating with a good growth of poplar and spruce and the soil showing some improvement with a rank vegetation. Section 33 is cut by a coulée 400 feet deep and several smaller ravines which are quite heavily wooded, but little of which is of value. Section 32 is gently undulating with similar soil and timber to the last.—*Henry W. Selby, D.L.S., 1904.*

Township 81 (east outline).—This township is very much broken by Bear creek and its branches and many ravines and coulées. The timber is generally small poplar with small bunches of spruce of fair size, the soil is clay loam on clay. A pack trail follows the bed of Bear creek at low water from Peace river to St. John's trail, but is very rough for the northern six miles with stones and boulders. The meridian crosses Bear creek in sections 12 and 36 where the banks are from 700 to 800 feet high.—*Henry W. Selby, D.L.S., 1904.*

Township 82 (east outline).—East boundary rises slightly to the north on section 12 where it gradually descends to Peace river in section 25, passing through small belts of poplar and spruce and prairie spots to the northeast corner of section 36. This extends up the north bank of the river to the general level of the country.—*Henry W. Selby, D.L.S., 1904.*

Range 18.

Townships 17 and 18 (lots 780 and 781).—These lots lie in the valley of Guichon creek. They were taken up from the province and had been surveyed. The survey was made in a very superficial way. The posts, lying down often, were the only marks of the original survey.—*Jos. E. Ross, D.L.S., 1904.*

Range 19.

Part of township 17.—The parts of this township surveyed lie in the Meadow creek valley. Along the creek there is considerable good wild hay meadow. On the hills there is some good grazing land. The valley being from 4,000 to 4,500 feet above sea-level, general farming cannot be carried on. Stock raising is the only branch that could be prosecuted with any success. The lower part of the valley is timbered with black pine; the hills with bull pine and fir. The best part of the valley has been taken up in lots from the province.—*Jos. E. Ross, D.L.S., 1904.*

Range 20.

Part of township 17.—The parts of this township surveyed lie in the Meadow creek valley. Along the creek there is considerable good wild hay meadow. On the hills there is some good grazing land. The valley being from 4,000 to 4,500 feet above sea-level general farming cannot be carried on. Stock raising is the only branch that could be prosecuted with any success. The lower part of the valley is timbered with black pine; the hills with bull pine and fir. The best part of the valley has been taken up in lots from the province. *Jos. E. Ross, D.L.S., 1904.*

Part township 17.—The part surveyed is mostly range land, partly open and partly heavily timbered with fir and pine. In the open there is good bunch grass; in the timber the grass is long, but sour. The country is generally hilly.—*Jos. E. Ross, D.L.S., 1904.*

Range 21.

Township 18.—Lot 1,021 lies in the Guichon creek valley. It adjoins lot 780.—*Jos. E. Ross, D.L.S., 1904.*

Parts Tps. 13 & 14.—Rgs. 22 & 23.—W. 6.

Parts Tp. 15.—R. 23.—W. 6.

The valley of Nicola river, which flows into Thompson river near Spence Bridge, trends in a southeasterly direction. It varies in width from a few chains to half a mile and has in general high mountains on either side. The lower part of the valley is open but is fairly well wooded towards the boundary. The timber is small to medium size, mostly pine and fir. Nicola river is about three chains in width and keeps continually winding from one side of the valley to the other. During low water it can be forded in places but during the early part of the summer, it attains considerable proportions with a depth of four or five feet and a very strong current. Most of the valley has been taken up in Indian reserves and provincial lots. The remaining arable land lies in small flats along the river. The soil is a sandy gravelly loam. As the land lies in the middle of the 'Dry Belt' it would be necessary to irrigate to obtain crops of any kind. Considerable water power might be obtained from several streams flowing into the Nicola. Spiaos creek, which flows into the Nicola at the boundary of the belt is the largest. The land along this creek has been staked out in coal claims. There is also considerable merchantable timber. At

present there is only a wagon road up the Nicola valley, but a railway is expected soon.—*Jos. E. Ross, D.L.S., 1904.*

Part Tp. 18, R. 23, W. 6th M.

“ 17, R. 23 “

“ 17, R. 21 “

“ 17, R. 22 ‘

Nearly all the land surveyed in these townships lies in what is known as Highland valley. The part east of the Divide is sometimes called High valley. The valley varies in width from a few chains to half a mile. There is some fairly good wild hay meadow but the best land is occupied by Indian reserves. The altitude is about four thousand feet above sea level. In consequence of this general farming could not be carried on. Stock raising is the only branch that could be undertaken with any fair degree of success. Several settlers have been living in the valley for some years but they did not care to make the usual settler's statutory declaration. It is supposed that there are several good mining claims in the valley. The provincial government have just completed a very good wagon road into the valley from Ashcroft. The timber in the valley is black pine about six inches in diameter. The hills are timbered with bull pine and fir, from ten to twenty inches in diameter.—*Jos. E. Ross, D.L.S., 1904*

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